The ILLINOIS Medical Journal

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February, 1953

Rabies — The Doctor's Dilemma

✦

Hazards and Pitfalls of Anticoagulant Therapy

✦

Aging

✦

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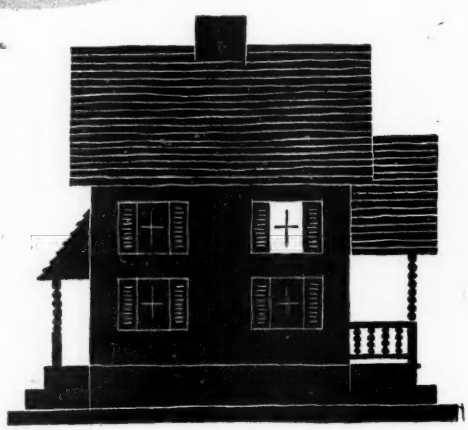

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Official Journal of the Illinois State Medical Society

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Vol. 103, No. 2 February, 1953

TOO MUCH ANTI-RABIC VACCINATION

The seriousness and dread of rabies in man is well known. What many physicians seem to appreciate much less and perhaps consider too lightly is that the anti-rabic vaccination of human beings involves serious risks also. Paralysis and encephalitis as complications of sequelae of vaccination against rabies are not rare. Records in Illinois over a ten year period show a post-vaccinal paralysis rate of 1 per 2800 patients vaccinated and there is some evidence that all cases of such complications are not reported. During the ten year period, 2 patients died and the health of others was left permanently impaired from complications resulting from treatments.

The U. S. Public Health Service has estimated that the national rate of serious post-vaccinal complications is about 1 in 6,000 persons treated. Iowa is reported to have had 1 death from rabies and 3 from post-vaccinal complications during the 10 years 1940-1950.

The number of persons vaccinated against rabies in Illinois ranges from about 3,000 to 6,000 per year. It seems unlikely, in view of the risk and the expense, that such a large volume is justified. More time and consideration might well be given to the evidence on which a decision to vaccinate is based. Perhaps the most important rule to follow is to observe, for 10 days before starting the Pasteur treatment, the animal which has bitten the patient. Vaccination against rabies is not indicated if the animal lives through 10 days after the biting. Caution and careful inquiry concerning the health and character of the biting animal, particularly of dogs, should be observed prior to initiating treatment even when the animal has been killed. In short, the decision to administer the Pasteur anti-rabic treatment should never be arrived at lightly.

Vaccination of dogs against rabies on a community-wide basis is a very effective and relatively inexpensive way to reduce infection among dogs and thus decrease the risk of exposure among people as well as among livestock. The general vaccination of valuable dogs coupled with the strict confinement of stray or ownerless dogs would minimize if not entirely eliminate the need of vaccinating people against rabies with its attendant risks. The following chart was prepared by the World Health Organization as a guide to physicians for deciding when to give anti-rabic treatment.

(See chart at top of next page)

INDICATIONS FOR RABIES VACCINE TREATMENT*

Nature of Exposure	Condition of Biting Animal At Time of Exposure	Condition of Biting Animal During Observation Period of 10 Days	Decision As To Vaccine Treatment At Time of Possible Exposure
I. No lesions: indirect contact only	Healthy or rabid	Healthy or rabid	None
*II. Licks: Skin or Mucosa (1) Unabraded	Healthy or rabid	Healthy or rabid	None
(3) Abraded	(a) Healthy	Healthy	None
	(b) Healthy	Clinicaly suspicious or proved rabid	**Start treatment at appearance of first suspicious signs**
	(c) Suspicious	Healthy	**Start treatment immediately;** stop treatment if animal remains normal for 3 days
	(d) Animal rabid escaped, killed, or unknown		START TREATMENT IMMEDIATELY
III. Bites	(a) Healthy	Healthy	No treatment, except if bites are multiple or face, head or neck bites; then treat as in III(c)
	(b) Healthy	Clinically suspicious or proved rabid	**Start treatment at appearance of first suspicious signs**
	(c) Suspicious	Healthy	**Start treatment immediately; stop treatment if animal remains normal for 3 days**
	(d) Animal rabid, escaped, killed, or unknown; or any bites by jackal, wolf, fox or other wild animal		START TREATMENT IMMEDIATELY

Note: Bites on the head, neck, and shoulders, deep multiple wounds, and those inflicted by wild animals involve a greater degree of risk, and patients should be treated accordingly.

*Adapted from World Health Organization Technical Report Series, 1950, No. 28.

ADEQUATE PUBLIC EMERGENCY AMBULANCE SERVICE FOR CHICAGO*

The provision of adequate public emergency ambulance service for Chicago has been a matter of civic concern since 1937. To have ambulance service available for emergency use in transporting persons injured in accidents, or suddenly stricken ill, to hospitals, first-aid stations, or their own homes, should be a community responsibility. Large cities like New York, San Francisco, Los Angeles, Cleveland, Milwaukee, and Indianapolis have demonstrated the value of such a service. Their experience indicates that it can be provided without harming the private services intended for nonemergency use.

A report, advocating the establishment of a public emergency ambulance service in Chicago, was published by a Joint Committee on Public Emergency Ambulance Service in 1940. Similar recommendations were made in 1949, in the report of the Chicago Cook County Health Survey. As a result of these recommendations, 14 ambulances were purchased and allocated to the Chicago Fire Department. Twelve of these ambulances, manned and operated by 70 firemen are routinely in service in 1952, with 2 in reserve. Nevertheless, the Police Department is still handling most of the calls for public emergency ambulance service. The Fire Department ambulances average two runs each 24 hours. Repeated spot checks indicate that, of all the patients entering Cook County Hospital by ambulance, police ambulances account for about

*Published in Jan. 15, 1953.
Proceedings of The Institute of Medicine.

85 per cent, and the Fire Department ambulances for about five per cent. This lack of utilization of the Fire Department ambulances is appalling. The cost of each run amounts to over $50 when salaries, maintenance of equipment, insurance, amortization of cost, and other essential items of expenses are included.

The Police Department gives evidence of doing a good job, in some ways, of handling emergency situations, even though working at times under extremely difficult situations. It uses a Squadrol, constructed for prisoner conveyance, which has space for a stretcher, but little in the way of equipment for the transportation of the sick and injured. The Police Department, by using its two-way radio system, has reduced the length of time between receipt of calls and the arrival of the police cars. The present method of handling accidents and emergencies, however, is a make-shift substitute for a well-equipped and well-organized public emergency ambulance service.

The subcommittee on public emergency ambulance service of the Institute of Medicine has been studying the problem. This committee believes that the present unsatisfactory situation can be remedied by the concerted efforts of a vigorous group, composed of representatives of medical and health agencies, welfare and civic organizations, and other interested groups. It expects to organize a committee of this type, whose function will be to stimulate a strong body of informed opinion about the need for adequate public emergency service in Chicago. The following objectives should be achieved:

1. Creation of a public emergency ambulance board. The members of this board, composed of outstanding civic leaders, would serve without compensation. They would be responsible to the mayor and would have overlapping terms of office. This board should have the same status as the Fire Department, Police Department, Health Department, and other city departments.
2. Provision of a unified public emergency ambulance service to operate under this board.
3. Establishment of zones throughout the city, where ambulance stations may be designated.
4. Certification, by the emergency ambulance board, of community hospitals, so that the care of emergency cases may be shared with Cook County Hospital.
5. Creation of a vigorous program of public education, which will arouse community interest and give faith to its citizens in Chicago's ability to provide a satisfactory public emergency ambulance service.

VITAMINS AND THE ILLINOIS PUBLIC AID COMMISSION*

At a recent meeting of the State Medical Advisory Committee to the Illinois Public Aid Commission, the following policy concerning the use of vitamins was advised. Action was deemed necessary because more and more physicians throughout the state are prescribing expensive vitamins without including a diagnosis of avitaminosis or other deficiency states on the usual forms of the Illinois Public Aid Commission. The Committee was informed that funds are limited and in effect that monies spent for unnecessary items may in the future deprive a recipient of much needed digitalis or penicillin. The Committee never questions the diagnosis of a physician nor does it attempt to tell him how to practice medicine or what to prescribe. All the Commission asks is that the diagnosis be in keeping with the remedies prescribed. In this regard there is no objection to giving vitamins for example to an old IPAC recipient who lives alone and neglects to eat, provided the reason is mentioned.

In general, the amount of vitamins prescribed is governed by the care with which the physician looks for evidence of avitaminosis or inquiries into the dietary history of the patient. Those who eat a well balanced diet including the essential foods rarely need additional vitamins. Beyond this, the use of vitamins depends upon the attitude of the physician toward these food supplements. The extremist believes every one needs vitamin supplements; others prescribe them as tonics or placebos. In the absence of evidence of a real need for vitamins, this represents a waste of the taxpayer's money and is poor medicine. Furthermore, the cost varies and all too

*Reports submitted before the Advisory Committee to the IPAC.

often, brewer's yeast will do as much as the more expensive B complex; and cod liver oil is an excellent source of vitamins A and D. As Dr. Hess states in the editorial to follow, concerning the needs of children along this line: "Vitamins should be obtained from the dairy, the grocery, and the market and it is only for exceptional cases that concentrates must be prescribed other than fish liver oils."

The Committee suggests, therefore, that the use of vitamins be limited to definite avitaminoses such as beriberi, pellagra, scurvy, and rickets. Vitamin B12 also is used in pernicious anemia. When evidence of dietary deficiency exists, specific vitamins may be necessary to correct night blindness, certain eye infections, loss of appetite, intestinal disorders, fissures at the corners of the mouth, oily dermatitis, sore tongue and mouth, diarrhea, neuralgia, Meniere's syndrome, migraine, weakness, sprue and related nutritional anemias, certain liver conditions such as cirrhosis, bleeding tendencies, and low prothrombin levels. There is need also for multiple vitamins in conditions that interfere with ingestion of food such as chronic gastrointestinal disorders (peptic ulcer, enteritis, or obstruction) and longstanding anorexia associated with alcoholism, neuropsychiatric disorders, and infections. Those with food allergy, loss of teeth, and on special diets may need supplementary vitamins and they are recommended occasionally in pregnancy, during lactation, and in children during periods of rapid growth. The vitamin needs are increased also during active infections especially when associated with long standing fever, hyperthyroidism, diabetes and advanced pancreatic disease. In diabetes, for example, the need stems not only from the diet but because polyuria is associated with an abnormal excretion of vitamins.

T. R. Van Dellen M.D.

Regarding children, the question was raised as to dispensing of vitamins and the following suggestions for meeting at least the minimum daily requirements for children's needs. Based largely on a large outpatient clinical experience and results obtained among the clients of the Chicago Welfare Administration, previously known as the Chicago Relief Administration during the past 18 years. The clientele of whom I will speak come from families who have or are receiving welfare aid. Digressing for the moment, I am quoting from my early experience on the staff of Cook County Hospital. Nutritional disturbances in infants and children as evidenced by rickets, scurvy, tetany etc, and intestinal and pulmonary infections accounted for most of the mortality in our wards. In many local neighborhoods in Chicago where poverty and ignorance were important etiologic factors in the development of nutritional disturbances, the same diseases were rampant.

Today in the wards of Cook County Hospital, extreme cases of rickets are rarely seen and classical cases of scurvy and tetany are so few that there is a shortage in the needs of these conditions even for teaching purposes. Quoting from the regulations governing medical services of the City of Chicago Department of Welfare, "*Therapeutic Diet* requests should be limited to inexpensive foods suitable for a low cost budget whenever possible. The Department of Welfare food budget allowance covers the cost of an adequate diet for a normal person. This allowance includes three-quarters of a quart of milk daily for each child through nine years of age; one quart for each child from ten through fifteen years; three-quarters of a quart for a girl sixteen through twenty; a quart for a boy sixteen through twenty and a pint for each adult. A set of low cost diets containing the normal diet and suggested therapeutic diets will be sent to physicians upon request."

All children under two years of age are encouraged to take a minimum of one or two teaspoonfuls of cod live oil daily and it is also available for older children where the physician thinks it is indicated without cost to the client. The discovery of the vitamins, their classification and their relationship to nutrition, both in health and in disease, must be considered one of the great contributions to medical science. It is becoming more firmly fixed in the minds of leading investigators that, except to meet specific indications, as in times of famine and certain economic upheavals, such as in war, the best method of obtaining sufficient vitamins is through a proper selection of foods. Vitamins should be obtained from the dairy, the grocery and the market, and it is only for exceptional cases that the concentrates must be prescribed other than fish liver oils. A survey of today

among the children and young adults in the same types of neighborhoods above quoted, the finest types of young adults are seen. Golden gloves, tennis, basketball, track and golf, the free use of bathing beaches in these same neighborhoods have resulted in the highest type of adolescent and adult development. (The extreme cost of vitamins today dispensed to the recipients of aid through the IPAC have brought the extravagance of our prescribing into the foreground in the hope that without curtailing help that may be indicated may result in great saving to the taxpayer.

J. H. Hess, M.D.

HABIT AND ADDICTION

We are creatures of habit.

As a psychiatrist, an old colleague of mine, wrote me recently that it is very difficult to draw a sharp line between mere habit and addiction. He suggested that if over-indulgence in a potentially harmful substance did no damage we were likely to regard it as a habit whereas if it obviously did harm we called it addiction. Perhaps instead of using the description "does no harm" we might substitute "does not interfere with normal life". There is no doubt that over-indulgence in some common ingesta, coffee for example, may in some people cause the jitters or even severe vertigo. Indeed as a young man I knew an illustrious gynecologist who could not drink even one cup of coffee because it caused him to act like an alcoholic in the garrulous stage.

Nowadays the word "problem" is often used as a qualifying adjective in describing addicts, and so much has been written about "problem drinkers" that we have almost lost sight of the fact that there are other types of "problem" people. There is, of course, statistical evidence that about one in every five regular consumers of alcoholic beverages is, for reasons not always clear, unable to curb his or her appetite for liquor. When one thinks the matter over one realizes that he knows people who seem unable or unwilling to restrain their consumption of tea or coffee, of soft drinks (especially those containing caffeine), of tobacco, of food, of their urge to work, of their craze for fast driving. Drug addiction may or may not be a comparable problem. We know tea, coffee, coke, and cigarette fiends, gluttonous eaters, speed maniacs and people who seem bent on working themselves to death.

What explains these phenomena or are there available interpretations? Can it be that they are merely a matter of habit? Certainly not always. There is no question that many of us are creatures of habit. We also know that some habits carried to excess have an underlying psychopathic basis and that there are diseases of endocrine origin, notably langerhansian and pituitary syndromes, in which excess is due to abnormal action of these ductless glands. Can it be that some harmful habituations are merely a matter of natural disposition or temperament, a quality hard to assess scientifically. Do some people continue to use certain substances to excess merely because they enjoy the effects just as one enjoys food or because they are lacking in that most important type of discipline, self-discipline. Are there pople with a constitutional affinity to addiction, as Eugene Kahn suggests, a sort of obsessive-compulsive phenomenon. We know that some excesses are stimulated by the desire to muffle the anxiety associated with these troublous times and that some excesses, such as overeating with obesity, may be inherited or the result of frustration, but we also know "problem" people in whom no such obvious explanations are present. Can it be that some gluttons have undetectable changes in a brain center which regulates hunger? There is evidence that some people overeat because they normally have an unusually high basal metabolic rate. The whole subject is intricate and problematic but perhaps not incapable in time of scientific solution.

G.B.

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KIWANIANS' $82,000 WILL FINANCE FIVE YEAR SPASTIC RESEARCH AT CHILDREN'S MEMORIAL

Basic problems of the deeper brain areas in cerebral palsy will be studied during the next five years at Children's Memorial Hospital in a project financed by the Illinois-Eastern Iowa District of Kiwanis International.

The research team which will carry out the work — all of whom are contributing their services — consists of Luis V. Amador, M.D., neurosurgeon; John A. Bigler, M.D., chief of staff at Children's Memorial; Joseph D. Boggs, M.D., pathologist; Douglas N. Buchanan, M.D., pediatric neurologist; George P. Guibor, M.D., ophthalmologist; John L. Reichert, M.D., pediatrician; Charles N. Pease, M.D., orthopedic surgeon; and Harvey White, M.D., radiologist, all of the Children's Memorial staff.

Advisory consultants are: Percival Bailey, M.D., professor of neurology and neurological surgery at the University of Illinois College of Medicine; Paul C. Bucy, M.D., professor of neurological surgery at the University of Illinois; Ray Snider, Ph.D., associate professor of anatomy at Northwestern University. Dr. John Hankinson, London, England, neurosurgeon, has arrived in Chicago as a resident fellow to assist in the work during the next year.

Kiwanis has set up a special Spastic Paralysis Research Foundation to administer the research funds. It is directed by a committee headed by Harry S. Himmel of Chicago, and consisting of C. Paul White, M.D., of Kewanee, Ross W. Griswold, M.D., of Litchfield, George L. Drennan, M.D., of Jacksonville, H. I. Conn, M.D., of Newman, Frank P. Hammond, M.D., and Harry R. Keiser, M.D., of Chicago, Ed Ballweg of Edwardsville and Bryant Hadley of Springfield, all past governors or lieutenant governors of Kiwanis.

On Saturday, Jaunary 10, the Kiwanis leaders and hospital and medical representatives dedicated a bronze plaque at Children's Memorial Hospital to mark the inception of the research project.

MENDOTA'S OWN HOSPITAL

The Mendota Community Hospital stands as a solid $500,000 testimonial to the courage and determination of a small town. The 5,000 people of Mendota, and another 7,000 neighbors who also benefit from the institution, took ten years to do the job, but they finally overcame war, inflation, materials shortages and other troubles to build the hospital they knew their community needed.

Moreover, there is not a cent of federal or state money in any part of the institution. The people of the area paid for it themselves. Probably no one in the whole community failed to contribute in some fashion, with money, work, materials, food and other services.

And the end is not yet. The committee and its 2500-member Women's Auxiliary are now planning to finish and equip the as yet incomplete south wing. But after what they have already done, that is a small task. Even then there will be no relaxation, for the hospital must be maintained, supplied and kept up to date. And these self-reliant citizens, who realize the community value of a good modern hospital, are determined to carry on permanently.

The hospital is also a memorial to the community spirit and personal leadership of the late Otto Ellingen, Mendota industrialist. It was Mr. Ellingen who sparked the ten-year drive for funds and then served as secretary-treasurer of the board of directors for six months after it opened, until his death.

The present president and treasurer of the board, H. D. Hume, who was also closely associated with the long fight, said of Mr. Ellingen:

"He was the kind of man any community is lucky to have. He wanted to leave more than he took from the community."

It was Mr. Ellingen, he explained, who kept up the spirits of other workers in the face of many discouragements and whose resourcefulness pulled trick after trick out of the bag to pile up the money needed. His death was a severe blow, but the impetus he imparted still remains.

A map will show the hospital's importance. In the northwestern corner of La Salle County, it is in the center of an area bounded by Princeton, 25 miles west, Dixon and Rochelle, 30 miles northwest and north, Sandwich, 30 miles east

and the La Salle-Peru area 16 miles south.

It thus serves an area with a radius of 15 to 25 miles and a population of about 15,000.

The hospital is a two-story and basement, concrete and ashblock structure on a seven-acre site at the intersection of Routes 51 and 52, only a short distance north of Route 34, on the western edge of Mendota.

The grounds themselves testify to the broad community participation in the project. Not only were the lawns, drives and shrubbery contributed, but the citizens themselves did the work. For instance, when a Utica firm offered gravel for the parking area, nearby farmers hauled it. The township lent heavy equipment to grade and roll it. Farmers brought their tractors to do the grading and planted the trees and shrubbery.

The hospital stands well back from the highway, giving not only a pleasant prospect, but freedom from traffic roar.

Inside, the visitor is greeted by Miss Schrei, administrator, whose pride in the institution shines behind every word of her description.

There is nothing unique about the hospital. Its plan, its appointments, its equipment, are those of many good well-designed small modern hospitals. It is rated now at 44 beds, with 14 bassinets. Its staff consists of 11 physicians, with 15 nurses. Its beds are usually full and it has an average of 25 deliveries a month.

It has two operating-rooms and the usual storage, scrub and dressing-rooms. In the maternity area, there are two delivery rooms, and the whole is carefully screened off from the rest of the building. Its laboratory is large and equipped to do all routine work. Blood is brought from Peoria. Everything is bright and clean and new.

The south wing is built but not finished inside. Its completion will add another twenty-five beds.

With all its charm and efficiency, however, the building itself does not compare in interest with the story behind it, as told by Mr. Hume.

It was in 1941, Mr. Hume says, that the movement for a good modern hospital began in Mendota. A survey was made and plans were drawn, but the war interfered, and little was done until peace came.

The original plan was for a 40-bed hospital to cost $225,000. The Mendota Hospital Foundation was created and after the war it raised much money. In 1947 the group had a site (selected by a vote of the contributors) and $250,000 in hand, but there was no material available, and prices had risen to a point where the money would build, but not equip, the hospital.

It was decided that more money must be sought and again the residents came through. But, every time they contributed, prices went up again and they had the battle for money all over again.

The contract for the building was let on April 1, 1949, and the work began. To raise the additional funds needed, as construction progressed, Mr. Ellingen organized drive after drive—and there was continuous pressure in between. The hospital's books now list its assets at $513,000.

Mr. Hume paid unrestrained tribute to the Women's Auxiliary. Each gave $1 to join, and to buy the right to work unremittingly. They bought linen and kitchen utensils. They fixed up their own headquarters in the basement, including its concrete floor and electric lights. They installed shelving for linen storage and bought an electrocautery. They sold magazines and gave dinners and bake sales. They canned vegetables — and still do. They held old-time "in-gatherings" and antique sales and bought old farm machinery for repair and re-sale. They built and sold scrap piles and traded livestock.

The men were busy, too. Every organization in or out of town pledged every cent it could spare. The Elks gave $65,000 in all as a group, and other organizations followed suit in proportion. They held tag days and sold bonds. They persuaded oldsters to remember the hospital in their wills. And they wrote to former residents of Mendota — no matter how far back their residence went — and got substantial gifts from California, New York, Ohio and Connecticut and many nearer places.

In the end the hospital was built and furnished — most of it.

That is about the story. Not many communities can match it for basic, old-fashioned, American self-reliance.

NINTH CLINICAL CONFERENCE OF THE CHICAGO MEDICAL SOCIETY

The ninth annual Clinical Conference of the Chicago Medical Society will be held in the Palmer House, Chicago, March 3-4-5-6, 1953.

Through its eight previous presentations, the annual Clinical Conference has evolved into one of the few largest and best teaching meetings in the world. The growth of the attendance, in 1952 around 6,000, reflects the devotion and energy of the men who have served on the various committees.

In addition to some 30 papers to be delivered in the 1953 Conference, the program will include a series of nine "practical demonstration" courses. This series, introduced in 1951, has proven so popular that it is being repeated on a more elaborate scale. Furthermore, each noon will see a round table discussion at luncheon. Each day's session concludes with an interesting panel discussion on clinicopatholgical problems, pediatrics, what's new or disorders of the chest. Carefully chosen scientific and technical exhibits will round out the program.

The program of papers and demonstrations as far as completed to date follows:

Tuesday, March 3

8:30 A.M. "Benign Lesions of the Breast"
Dr. Louis P. River, Clinical Professor of Surgery, Stritch School of Medicine, Loyola University

9:00 A.M. "Chemotherapy in Tuberculosis"
Dr. Robert H. Ebert, Associate Professor of Medicine, University of Chicago School of Medicine

9:30 A.M. "Some Considerations in the Recognition of Congenital Cardiac Disease"
Dr. Maurice A. Schnitker, Toledo, O.

11:00 A.M. "Plasma Expanders and Their Logical Use in Civilian Practice"
Dr. Frank W. Hartman, Pathologist and Director of Laboratories, Henry Ford Hospital, Detroit, Mich.

11:30 A.M. "Functional Diseases of the Digestive Tract"
Dr. Sara M. Jordan, Director, Department of Gastroenterology, Lahey Clinic, Boston, Mass.

1:30 P.M. "Management of Congenital Atresia of the Esophagus with Tracheal Esophageal Fistula"
Dr. Cameron Haight, Professor of Surgery, University of Michigan Medical School, Ann Arbor, Mich.

2:00 P.M. "Treatment of Urinary Infections — The Choice of Drug"
Dr. Grayson Carroll, Asst. Professor of Urology, St. Louis University School of Medicine, St. Louis, Mo.

2:30 P.M. "Pain in the Right Lower Quadrant of the Female Abdomen"
Dr. John C. Burch, Professor of Gynecology, Vanderbilt University School of Medicine, Nashville, Tenn.

4:00 P.M. "Cardiac Arrests"
Dr. Max S. Sadove, Professor of Surgery, Head, Division of Anesthesiology, Research and Educational Hospitals, University of Illinois College of Medicine.

Wednesday, March 4

8:30 A.M. "Pre and Post-Operative Care in Elderly People"
Dr. E. Lee Strohl, Associate Professor of Surgery, University of Illinois College of Medicine, Attending Surgeon, St. Luke's Hospital.

9:00 A.M. "Ectopic Pregnancy"
Dr. John I. Brewer, Professor of Obstetrics and Gynecology, Northwestern University Medical School.

9:30 A.M. "Hepatitis"
Dr. Cecil J. Watson, Professor of Medicine, University of Minnesota Medical School, Minneapolis.

11:00 A.M. "Common Errors in Dermatologic Management"
Dr. Rudolf L. Baer, Associate Professor of Clinical Dermatology & Syphilology, New York University Post Graduate Medical School, New York.

11:30 A.M. "Pitfalls in the Roentgen Diagnosis of Pulmonary Disease"
Dr. Philip J. Hodes, Professor of Clinical Radiology, Medical School, University of Pennsylvania; Professor of Radiology, Graduate School of Medicine, University of Pennsylvania, Philadelphia.

1:30 P.M. "Treatment of Embolic Occlusion of Vessels"
Dr. D. W. Gordon Murray, Toronto, Ontario.

2:00 P.M. "The Problem of Glaucoma"
Dr. Arthur J. Bedell, Emeritus Professor of Ophthalmology, Albany Medical College, Albany, N. Y.

2:30 P.M. "The Use of Marsilid for the Treatment of Bone and Joint Tuberculosis"
Dr. David M. Bosworth, Director and Attending in Orthopedic Surgery at St. Luke's and Sea View Hospitals.

4:00 P.M. "Treatment of Infantile Diarrhea"
Dr. Daniel C. Darrow, Professor of Pediatrics, Yale University School of Medicine, New Haven, Conn.

Thursday, March 5

8:30 A.M. "Pitfalls in Urology"
Dr. Wm. J. Baker, Associate Professor of Urology, Northwestern University Medical School.

9:00 A.M. To be announced
Dr. Samuel M. Feinberg, Professor of Medicine, Northwestern University Medical School.

9:30 A.M. "Surgical Treatment of Lesions of the Esophagus"
Dr. O. T. Clagett, Professor of Surgery, University of Minnesota Graduate School, Rochester, Minn.

11:00 A.M. "The Indications for Surgical Treatment of Heart Disease"
Dr. Charles P. Bailey, Professor and Head of the Department of Thoracic Surgery, Hahnemann Medical College and Hospital of Philadelphia.

11:30 A.M. "Management of the Patient with a Solitary Mass in the Lung"
Dr. C. Allen Good, Associate Professor of Radiology, University of Minnesota Graduate School, Rochester, Minn.

1:30 P.M. "Human Anxiety and its Effects"
Dr. Roy R. Grinker, Director of Institute of Psychosomatic & Psychiatric Research and Training, Michael Reese Hospital.

2:00 P.M. "Clinical Manifestations of Hyperthyroidism with Emphasis on Frequently Unrecognized Features"
Dr. Elmer C. Bartels, Boston, Mass.

2:30 P.M. "Classic Syndromes of Brain Tumor"
Dr. John E. Scarff, Professor of Clinical Neurological Surgery, Columbia University College of Physicians and Surgeons, New York.

Friday, March 6

8:30 A.M. "The Treatment of Diabetes Mellitus"
Dr. Arthur R. Colwell, Irving S. Cutter Professor and Chairman of the Department of Medicine, Northwestern University Medical School.

9:00 A.M. "Immunization Procedures for the Child"
Dr. John L. Reichert, Asst. Professor of Pediatrics, Northwestern University Medical School.

9:30 A.M. "The Pigmented Nevi and Their Relationship to Malignancy"
Dr. Eugene F. Traub, Professor of Dermatology, New York Medical College, New York.

11:00 A.M. "Diagnosis and Treatment of Cancer of the Neck"
Dr. John J. Conley, Chief, Head and Neck Service, Pack Medical Group and Chief, Head and Neck Service, St. Vincent's Hospital, New York.

11:30 A.M. "Blood Reactions to Various Drugs"
Dr. William Dameshek, Professor of Clinical Medicine, Tufts College Medical School, Boston, Mass.

1:30 P.M. "Gynecological Symptoms of Major Importance to the Physician in General Practice"
Dr. V. S. Counsellor, Head, Section of General and Gynecological Surgery, Mayo Clinic; Professor of Surgery, University of Minnesota Graduate School, Rochester, Minn.

2:00 P.M. "Hypertension and Drugs"
Speaker to be announced.

2:30 P.M. "Foreign Bodies in the Air and Food Passages"
Dr. Paul Holinger, Professor (Bronchoesophagology) Dept. of Otolaryngology, University of Illinois College of Medicine.

DEMONSTRATIONS

NEUROLOGY CLINIC: Dr. Benjamin Boshes, Associate Professor and Chairman of Nervous and Mental Diseases, Northwestern University Medical School.

DERMATOLOGY CLINIC: Dr. Herbert Rattner, Professor and Chairman, Department of Dermatology, Northwestern University Medical School.

FRACTURE CLINICS:
"Upper Extremities" Dr. James K. Stack, Associate Professor of Bone and Joint Surgery, Northwestern University Medical School.
"Lower Extremities" Dr. James J. Callahan, Professor & Chairman, Department of Bone and Joint Surgery, Stritch School of Medicine, Loyola University.

OBSTETRICS & GYNECOLOGY: Dr. Frederick H. Falls, Professor and Head, Department of Obstetrics and Gynecology, University of Illinois College of Medicine.

FLUID & ELECTROLYTE BALANCE IN SURGERY: Dr. John T. Reynolds, Clinical Associate Professor of Surgery, University of Illinois College of Medicine.

RADIOLOGY: Dr. Warren W. Furey, Asst. Clinical Professor of Roentgenology, Stritch School of Medicine, Loyola University.

TUMOR CLINIC: Dr. Danely P. Slaughter, Director of Tumor Clinic; Associate Professor of Surgery, University of Illinois College of Medicine.

REHABILITATION CLINIC: Dr. Frances Hellebrandt, Head, Department of Physical Medicine and Rehabilitation, University of Illinois College of Medicine.

MEDICAL ECONOMICS

The Medical Economics Committee. John R. Wolff, Chairman, Walter C. Bornemeier, Edward W. Cannady, Roland R. Cross, Jr., E. F. Dietrich, W. W. Fullerton, Edwin F. Hirsch, Frederic T. Jung, W. R. Malony, Caesar Portes, William Requarth, Frederick W. Slobe.

The V. A. Hospital and the Private Physician

Roland R. Cross, Jr., M.D.

Chicago

To a large number of people, physicians included, the Veterans Administration Hospital is a large vaguely defined thing that seems somewhat incomprehensible. Part of this is due to its size and part due to the feverish activity of the times where each citizen is so busy with his own job that he really hasn't taken time since 1940 to stop and think about this activity. Many items come up and the hurried, harried individual in an exasperated manner shrugs his shoulders with a meaning of what can be done with such a big impersonal thing. This is especially true of physicians who have patients that want to go to a V. A. Hospital or who have returned from one desiring their private physician to continue the care instituted at the hospital.

The United States has had a program for the care of its veterans even from before the Revolutionary War. At the end of World War I however, the veteran population had increased to such an extent that the system of veterans care began to fall apart. As a result of the findings of a special commission, congress in 1921 combined all the veteran activities of the Bureau of War Risk Insurance, the Federal Bureau for Vocational Education, and the U. S. Public Health Service into the one agency — the Veterans Bureau. In 1930 it was further combined with the Pension Bureau and the National Military Home Service to form the Veterans Administration. One division of the Veterans Administration is the Department of Medicine and Surgery which, among other things, operates (or will when the present construction is finished) 174 hospitals with 131,000 beds. The Department of Medicine and Surgery is allocated two and one half cents of every tax dollar.

There are approximately 20,000,000 veterans which means that one out of every seven and one-half citizens (men, women, and children) is a veteran. Furthermore new veterans are being made constantly as a result of the Korean activity. The Department employs approximately 127,500 full time and part time employees, of whom nearly 24,000 are nurses, den-

tists, and physicians.

The V. A. Hospital is primarily designed to care for service-connected disabilities suffered by veterans. These people have top priority. The hospitals have no out-patient program although the Department does maintain some out-patient clinics for the care of service connected disabilities. No out-patient care is given to non-service connected cases. A veteran with a non-service connected disability is advised upon leaving the V. A. Hospital to continue any needed treatment at his own expense with his local physician. For example, a veteran with a peptic ulcer needs to continue therapy with his own physician. All too often the local physician in an exasperated manner tells the veteran that he doesn't know what the V. A. did for him. It can be found out easily. The V. A. Hospital is more than willing to give a report of its findings and recommendations to the patient's physician — with one provision, the patient must sign a release of information form. All records regarding a patient are considered private and cannot be released without the expressed permission of the veteran. If the patient would sign such a release when he is discharged from the hospital, directing that the information be sent to his own physician, it would be done in a few days, often being in the hands of the family physician before the patient had contacted him. In the case of veterans of the Spanish-American War, the Philippine Insurrection, and the Boxer Rebellion, the Congress in 1950 passed a law giving these veterans a presumed service connection for any illness. This for all practical purposes gives these veterans complete medical care, at home or at the V. A. Hospital. This bill was passed over the President's veto and represents a new precedent.

This brings up a very important point, namely, that the Laws, Rules, and Regulations which govern the Veterans Administration are passed and authorized by congress as the duly elected representatives of the people. The V. A. is merely the agency of the people of the United States in carrying out the laws of Congress. These laws vary and are not the same for all veterans. For example, there are specific laws in regard to paraplegics. There are still other laws in regard to the blind. There has as yet been no authorization for the care of a veteran's dependents or for obstetrical care for women veterans. However, some cases of ectopic pregnancy or incomplete abortion have been cared for.

Congress has authorized that a veteran ill with a non-service connected disability can be hospitalized if beds are available and if the veteran in unable to pay for such medical care. No argument has ever arisen in regard to this clause for patients with chronic catastrophic illnesses in the fields of tuberculosis, paraplegia, psychiatry, or neurology. This is probably a silent admission that present day plans do not adequately care for the chronic illness of this kind. Physicians have complained at the loss of revenue when a patient goes to a V.A. Hospital for a hernia repair or a hemorrhoidectomy which they feel, being non-service connected, should go to a private physician. The Veterans Administration is helpless as regards this argument for Congress has given it no power to investigate whether or not a patient is telling the truth when he states he cannot pay.

No patient requires an intermediary such as a service organization to gain entrance into the V. A. Hospital. If he is sick and he presents himself at the admitting office he will be admitted if a bed is available. He needs only his discharge papers showing he is a bona fide veteran.

For patients who are too sick to come, they need only have their family physician call the nearest V. A. Hospital and give the diagnosis along with a statement as to its severity. In an occasional case the local physician, forgetting his own position as a taxpayer, does not accurately report the patient's true condition, perhaps in order to get rid of an unwanted patient. However, most physicians are honest when they call. In these cases the V. A. will pay for transportation, by ambulance in some cases (or send one to their own ambulances), for the veteran from the place of his illness to the nearest V. A. Hospital. This is true for both service connected and non-service connected illnesses if the referring physician states that the patient needs it. Here again the referring physician may forget he is a taxpayer and in order to impress the V. A. with the severity of the patient's illness may recommend ambulance travel when a car would serve as well — and would be more eco-

nomical.

The total cost per patient is less than $14.00 a day. This includes professional salary, laboratory, x-ray, nursing care, rehabilitation, and other items. This is much less than the per day cost for private hospital care which, also, would not include the physician's fee.

Since the reorganization of the Department of Medicine and Surgery in 1945 by Dr. Paul Hawley so that most of the hospitals are connected with medical schools, there has been an enlarged teaching program. All physicians are invited to attend these meetings. In fact, a physician might learn a great deal by visiting a Veterans Hospital such as the one at Hines, Illinois.

The V. A. Hospitals no longer have any waiting lists except in such categories as psychiatry, tuberculosis, and medical neurology. These cases move slowly and the bed turn over is not rapid.

The V. A. Hospitals in Illinois are located at Marion, Dwight, Downey, and Hines. Two new ones are being built in Chicago.

SUSCEPTIBILITY TO ATHEROSCLEROSIS

Atherosclerosis itself in human beings is extremely frequent, and is generally recognized today as the leading cause of death, and one of the greatest contributors to physical and mental incapacity. The exact incidence in our own population is not known. The figures of Wilens, a pathologist at New York University, are revealing. He found that 60 per cent of the Bellevue Hospital population coming to autopsy above the age of 35 revealed moderate or advanced atherosclerosis; between 45 and 54, one-eighth had advanced lesions; at 75 or over the disease was evident in 90 per cent, 50 per cent of the patients examined having advanced lesions. Such figures indicate that in humans, as contrasted with most other animals, the tendency to the disease is so great that almost everyone is affected. The enormously high incidence has given wide credence to the belief that atherosclerosis is the inevitable result of aging. Pathologically, the contrary opinion that it is not inevitable rests only in a study of approximately 10 per cent of the population above the age of 75 in which the disease is inconsiderable or absent. Nevertheless the most single fact about atherosclerosis is that we as members of the human race are extraordinarily susceptible. The question whether this tendency is due to our essential homeostatic mechanisms, or to extraneous factors of diet, mode of life, diseases, and accidents, forms the basis of many of the present investigations and disputes. *Practitioners' Conference. Arteriosclerosis. New York Med. Dec. 5, 1952.*

CORRESPONDENCE

THE WOMAN'S AUXILIARY AND THE STATE MEDICAL SOCIETY

"Aid, ally, assistant, coadjutor, confederate, helper, promoter." All these dictionary synonyms each member of the Woman's Auxiliary should and can be to the Illinois State Medical Society. It is not difficult for groups of doctors' wives organized into County Auxiliaries to find ways to help their county Medical Societies; but sometimes we wives of small-town general practitioners in counties where auxiliary organizations are impracticable feel that we are too alone to be useful. "It aint necessarily so."

You can be a member-at-large. Consider, please, just two of the many possible, and very tangible, ways in which every doctor's wife could help. First, by paying membership dues of $3.00 a year (you may send them to me) you automatically contribute $1.00 to the Benevolence Fund of the Illinois State Medical Society. More and more the Medical Society is depending upon its Auxiliary to build up that fund. Last year we contributed over $6000.00. Last year there were 7552 more members of the Illinois State Medical Society than there were members of the Auxiliary. Simple arithmetic shows that there are about 7500 women who, by the mere act of joining the Auxiliary, could add $7500.00 to the Benevolence Fund. That suggestion is not even altogether altruistic — we never know when we ourselves may need help from that fund.

Having joined the Auxiliary you will receive, as a member-at-large, the same information sent by committee chairmen to each County Auxiliary. A quick reading of the Illinois Auxiliary News and of the letters sent by the state chairmen of program, legislation, public relations, and civil defense can keep you informed and make you a valuable public relations aide to your husband's profession.

You, in small towns, are more important than you realize. You are the only people in your communities who have the information that comes from the State Auxiliary. You are the only ones who are qualified to interpret — not from the soapbox, but through everyday conversations and contacts with local organizations such as P.T.A., Home Bureau, and Woman's Club — the actions and attitudes of the medical profession.

If you really want to work as an Auxiliary member there is much more that you can do. But if your constant cry is "too busy" why not consider the good you can do by just becoming a member-at-large of the Auxiliary? We need you.

(Mrs. G. H.) Jean M. Edwards, Chairman.
Pinckneyville, Illinois

CLINICS FOR CRIPPLED CHILDREN LISTED FOR MARCH

Doctor Herbert R. Kobes, director of the University of Illinois Division of Services for Crippled Children, has released the March schedule of clinics for physically handicapped children. The Division will count 16 general clinics providing diganostic orthopedic, pediatric, speech and hearing examinations along with medical social and nursing services. There will be 4 special clinics for children with rheumatic fever and 2 for cerebral palsied.

Clinics are held by the Division in cooperation with local medical and health organizations and groups, hospitals, civic and fraternal clubs, and other interested groups. Any private physician may refer or bring to a convenient clinic any child or children for whom he may want examination or may want to receive consultative services.

The March clinics are:

March 3 — Centralia, Recreation Center
March 4 — Rock Island (Cerebral Palsy), Foss Home, 3808—8th Avenue
March 4 — Hindsdale, Hinsdale Sanitarium
March 5 — Chester, St. John's Lutheran School
March 6 — Evanston, St. Francis Hospital
March 10 — East St. Louis, St. Mary's Hospital
March 10 — Peoria, St. Francis Hospital
March 11 — Joliet, Will County T.B. Sanitarium
March 11 — Alton, Alton Memorial Hospital
March 12 — Elmhurst (Rheumatic Fever), Memorial Hospital of DuPage County
March 12 — Springfield, St. John's Hospital
March 13 — Chicago Heights (Rheumatic Fever), St. James Hospital
March 18 — Evergreen Park, Little Company of Mary Hospital
March 18 — Metropolis, Presbyterian Parish House
March 19 — Rockford, St. Anthony's Hospital
March 24 — Peoria, St. Francis Hospital
March 24 — Effingham (Rheumatic Fever), Douglas Township Building
March 25 — Aurora, Copley Memorial Hospital
March 25 — Springfield (Cerebral Palsy), Memorial Hospital
March 26 — Bloomington, St. Joseph's Hospital
March 26 — Macomb, St. Francis Hospital
March 27 — Chicago Heights (Rheumatic Fever), St. James Hospital

In carrying on its program the Division works cooperatively with local medical societies, hospitals, the Illinois Children's Hospital-School, civic and fraternal clubs, visiting nurse associations, local social and welfare agencies, local chapters of the National Foundation for Infantile Paralysis and other interested groups.

The Division of Services for Crippled Children is the official state agency established to provide medical, surgical and corrective and other services and facilities for diagnosis, hospitalization, and after-care for children who are crippled or who are suffering from conditions which may lead to crippling.

TB SYMPOSIUM FOR GP'S IN SARANAC LAKE NEXT SUMMER

The Second Annual Tuberculosis Symposium for General Practitioners will be held in Saranac Lake, N. Y. from July 13 through 17, 1953. It is approved by the American Academy of General Practice for 26 hours of formal credit for its members.

The Symposium is sponsored by the Saranac Lake Medical Society and the Adirondack Counties Chapter of the New York State Academy of General Practice. The registration fee is $40 for A. A. G. P. members and $50 for non-members. Registration is limited to 100 doctors.

Many physicians who attended last year's symposium brought their families to Saranac Lake. So that families might have use of the car to enjoy the many recreational facilities of the Adirondack Mountains, free bus transportation was provided for physicians from Saranac Lake to the various meeting places. This practice will be followed again this year.

Many of the sessions are informal panel discussions with ample opportunities for questions from the audience.

The Symposium will be held in various sanatoria and laboratories in the Saranac Lake area. Morning sessions will be from 8:30 to 12:30 and afternoon sessions from 2:00 to 3:30 (Monday, Wednesday, and Thursday). There will be

elective sessions on Tuesday and Friday afternoons. Physicians desiring to make patient rounds will have that opportunity each afternoon at 4:00. On Monday, July 13th there will be a dinner for physicians attending the course, their families and the faculty.

The speakers and panel members at the Tuberculosis Symposium will include physicians, surgeons and scientists from Saranac Lake and surrounding areas.

Complete information concerning this program can be obtained by writing: Richard P. Bellaire, M.D., Tuberculosis Symposium for General Practitioners, P. O. Box 707, Saranac Lake, New York.

PREPARE MANUAL FOR ARTHRITIS CLINICS

A Manual for Arthritis Clinics, said to be the first of its kind, is just off the press from the Arthritis and Rheumatism Foundation, according to an announcement by the national medical director, Dr. Gideon K. deForest, at Foundation headquarters in New York City. The Manual was published jointly with the National Institute of Arthritis and Metabolic Diseases. The 64-page book not only contains practical information on the administration of a clinic for the rheumatic diseases but also diagnostic criteria covering the 30 or more arthritides, criteria for grading the effectiveness of therapy, information on selecting and training clinic staff, and the use of social workers and volunteers. The material is considered definitive as it was prepared by a special committee of the New York Rheumatism Association in cooperation with the New York Chapter of the Foundation.

"The limited number of arthritis clinics — only about 250 in the whole country for an incidence of approximately 7,500,000 cases — is a well recognized fact," said Dr. deForest, "and more and more hospitals are moving to increase their facilities in this regard. This book is aimed to supply needed information on setting up an efficient clinic."

Priced at 50 cents, copies may be obtained by writing to any of the 32 Chapters of the Foundation or to national headquarters, 23 West 45th Street, New York 36, N. Y.

PHYSICIANS WANTED IN STATE HOSPITALS

A severe shortage of Physicians and Tuberculosis Control Physicians still exists in several Illinois state hospitals.

Oral tests for Physician I, Tuberculosis Control Physician I, and Psychiatrist I will be held as often as a sufficient number of persons apply.

Higher starting salaries for the positions were announced recently by the Welfare Department because of the shortage.

Physicians who satisfactorily complete three years of service with the Department of Public Welfare are eligible for an educational leave of absence with full pay to conduct research or study approved by the Department.

Additional information and application forms may be obtained from local offices of the State Employment Service or from the Civil Service Commission, Armory building, Springfield.

FELLOWSHIP IN INTERNATIONAL COLLEGE OF SURGEONS

Qualifying examinations for Fellowship in the United States Section of the International College of Surgeons will be held on the following dates in 1953: February 2 and 3, May 4 and 5, August 10 and 11, and November 2 and 3. The examinations will be given at the Cook County Graduate School of Medicine, and the Cook County Hospital. Applicants are requested to address communications as follows:

Harry A. Oberhelman, M.D., Secretary
Qualification and Examination Council
1516 Lake Shore Drive
Chicago 10, Illinois

NEW EDITORIAL CONSULTANT FOR WILLIAMS & WILKINS CO.

It is announced by The William & Wilkins Company, medical publishers of Baltimore, Maryland, that effective with January 1953 Dr. Henry J. L. Marriott will become consultant to their editorial department.

Dr. Marriott is Assistant Professor of Medicine at the University of Maryland School of Medicine and is the author of a recent popular book, published by The Williams & Wilkins Company, entitled, "Medical Milestones".

OBSTETRICIANS ELECT OFFICERS, LAUNCH NEW JOURNAL

More than 1100 Fellows and non-members attended the First Annual Clinical Session of the American Academy of Obstetrics & Gynecology in Chicago December 15-17, 1952.

Robert A. Kimbrough, Jr., Philadelphia, was installed as the third president of the Academy. Bayard Carter, Durham, No. Car., was chosen president-elect to take office a year from now.

Other new officers elected include: C. Paul Hodgkinson, Detroit, secretary; Charles D. Kimball, Seattle, assistant secretary; Joe Vincent Meigs, Boston, second vice president. Re-elected were Howard Stearns, Portland, Ore., first vice president and Herbert E. Schmitz, Chicago, treasurer.

The Acadamy's Second Clinical Session will be held in the Netherland Plaza Hotel, Cincinnati, December 14-16, 1953. Chairman of the Program Committee is Andrew J. Marchetti, Washington, D. C. Local Arrangements Chairman is Arthur G. King, Cincinnati.

Texts of formal papers presented at the First Clinical Session will be printed in the Academy's new journal, "Obstetrics and Gynecology", beginning with the first issue in January 1953.

Published monthly, the journal will be edited by Ralph R. Reis, Chicago. It will contain some 120 pages of scientific material in each issue, as well as other items of interest to physicians practicing obstetrics and gynecology.

The following educational scientific exhibits were given awards for excellence at the First Clinical Session:

First place — "Significance of Circulatory Phenomena in Abruptio Placentae", Charles L. Schneider, M.D., Ruby E. Engstrom, M.D., and Robert G. Braden, M.D., of Wayne University, Detroit, and Wayne County General Hospital, Eloise, Mich.

Second place — "Pregnancy in the Bicornuate Uterus", Frederick H. Falls, M.D., and Miss Charlotte S. Holt, of the University of Illinois College of Medicine and Illinois State Department of Public Health, Chicago.

Third place — "Pathology of Ovarian Tumors", Edward G. Winkler, M.D., and Gordon J. Hippert, M.D., of University of Buffalo School of Medicine, Edward J. Meyer Memorial Hospital and Sisters of Charity Hospital, Buffalo, N. Y.

Honorable Mention — "A Simple Test for Early Pregnancy, Ovulation, and Estrogen Activity by the Use of the Cervical Mucus Secretion", Maxwell Roland, M.D., of New York Post-Graduate Medical School, New York University, Bellevue Medical Center and Queens General Hospital, New York, N. Y.

AWARD FOR OUTSTANDING RESEARCH IN THE FIELD OF INFERTILITY

The American Society for the Study of Sterility announces the opening of the 1953 contest for the most outstanding contribution to the subject of infertility and sterility. The winner will receive a cash award of one thousand dollars, and the essay will appear on the program of the 1953 meeting of the Society. Essays submitted in this competition must be received not later than March 1, 1953. For full particulars concerning requirements of this competition, address The American Society for the Study of Sterility, c/o Dr. Herbert H. Thomas, 920 South 19th Street, Birmingham, Alabama.

The author should append on a separate sheet of paper a short biographical sketch of himself and include a photograph to be used in the necessary publicity should he be the winner of the award.

PRACTICAL NURSE ASSOCIATION OF ILLINOIS

The Annual Convention for The Practical Nurse Association of Illinois, is scheduled for March 5, 6, and 7, 1953, at the Hotel Orlando, Decatur, Illinois.

Sincerely Yours
Ellen E. Marsh, L.P.N.
Chr. State Program Comm.
235 South Webster
Decatur, Illinois

ORIGINAL ARTICLES

Rabies — The Doctor's Dilemma

Howard J. Shaughnessy, Ph.D.,
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Unfortunately, because Illinois falls in the area in which the incidence of animal rabies is very high, every animal bite must be considered as a potential exposure to rabies. About fifteen thousand persons are reported to be bitten by animals each year in Illinois. Thus, the potential number of exposures to rabies is high.

The fact that all biting animals are not rabid creates one horn of the doctor's dilemma. The other horn arises from the fact that antirabic vaccine is not innocuous and, therefore, should not be administered to anyone probably not exposed to actual risk of infection. Since, it is not always possible to determine with certainty the true risk of exposure, in practice the dilemma resolves itself into the necessity of weighing the relative risks of contracting rabies versus development of post-rabic vaccine paralysis.

There is now general agreement that the danger of contracting rabies is confined to the following groups of persons: 1. Those exposed to clinically rabid animals; 2. Those exposed to animals proved to be rabid by laboratory examination; 3. Those exposed to animals which cannot be identified; 4. Those children who have probably been exposed to a rabid animal but who are too young to give reliable testimony concerning the exposure.

Exposure may be defined as the condition which exists when wet saliva comes into contact with fresh, open wounds or abrasions. Deposition of saliva on unbroken skin or on old scab-covered wounds does not constitute real exposure to rabies.

While the condition of the biting animal is being determined by observation and/or laboratory examination, the patient's wounds should be freed from rabies virus as quickly and thoroughly as possible. The expert committee on rabies of the W H O has recommended that irrigation with 20% soap solution be used in place of cauterization with fuming nitric acid. More recent studies indicate that swabbing wounds artificially contaminated with rabies

virus with 1% refined benzalkonium chloride (zephiran) is even more effective than irrigation with soap solution.

Because of the greater risk of infection following bites on the head or severe bites elsewhere, it may be necessary in some cases to begin anti-rabic vaccination of the patient before the condition of the biting animal is known. Johnson states that average incubation periods following bites on the areas indicated are as follows: head 30 days, arm 50 days, leg 44 days. The fatality rate also varies with the location and type of wound. The following table (Table 1) from Babes gives the fatality rates in untreated cases. Treatment may be discontinued after a week if the animal has shown no signs of rabies in the interim. The only reason for doing so is the danger of post-vaccinal reactions.

TABLE 1

Fatality Rates in Untreated Rabies
(Adapted from Babes[4])

Type of Exposure to Rabid Dog	Fatality Rate %
Multiple and deep wounds of face	50-60
Multiple and deep wounds on other uncovered parts	30
Superficial wounds on uncovered parts	10
Deep wounds on covered parts	3
Contact of recent wounds with infected saliva	0.1
Contact of wounds more than 24 hours old	0

It has usually been stated in the past that post-vaccinal reactions of the neuro-paralytic type occurred in about one patient in each two to three thousand persons vaccinated. The incidence is now believed to be higher. Horack reported a ratio of 1:1200 (10% fatal) in twenty-four thousand treated persons. Pait and Pearson reported an incidence of 1:600 (1 fatal) in 5,500 treated. Our recent analysis of about 25,000 cases showed an incidence of 1:1700 (2 fatal). Probably all of these figures are subject to errors. Some instances of even severe reactions go unreported. In other cases the reported actions have been slight and may have been unrelated to the administration of the vaccine.

All observers are agreed that the risk of neuro-paralytic reactions is much greater in those who have had a previous course of inoculations with vaccine. Therefore, reimmunization should not be given in borderline exposures and, if given at all, should be limited to a short booster course of 5 to 7 injections. Authorities also agree that vaccination should be discontinued as soon as early signs or symptoms of impending serious reactions appear such as headache, fever, nausea, weakness, numbness or tingling sensations in the extremities.

Since the mechanism by which these reactions are produced is not known, although suspected to be on the basis of allergy to some substance in the vaccine, there is no way of treating the vaccine to render it incapable of producing neuro-paralytic reactions.

It has been suggested by some that, since anti-rabic vaccine appears to cause these untoward reactions, its use be discontinued. It has even been stated that anti-rabic vaccine causes more deaths than rabies. The author cannot agree with this thesis because he feels that there is good evidence in favor of rabies vaccine. It is possible to develop a high degree of protection against rabies in animals with modern vaccines. In persons practically all vaccine failures can be explained on the basis of poor quality vaccines such as were used in the past, failure to administer the vaccine soon enough after exposure, or the occasional instance in which the incubation period is so short that there has been no time for antibodies to develop following vaccination. Indeed, one of the strongest pieces of evidence in favor of vaccination is the fact that prior to vaccination 80% of cases had incubation periods of over 30 days whereas in the vaccinated most cases occur after a short incubation. As a matter of fact, in Illinois rabies very rarely occurs in a vaccinated individual. Most cases occur in those who for some reason have failed to get vaccine.

The only way that the value of anti-rabic vaccine could be shown without doubt is by an alternate case series. It is unfortunate that this was not done in the early days of vaccination. The nearest we can come to such a series now is Cornwall's earlier data in which he compared the fatality rates in persons bitten by the same animals, some of which accepted or rejected treatment, respectively. The rates were 2.9%

in the 812 treated persons and 6.2% in the 1,362 untreated. More recent figures for 1949-1950 from the same institution in which Cornwall gathered his figures show that 9.5% of 84 completely treated patients died whereas 44.2% of 43 untreated persons bitten by the same animals succumbed. One would assume that these figures would be weighted in favor of the untreated group, because it would appear logical that the most severely bitten patients would be more likely to seek treatment and the less severely exposed would not. It must be emphasized that these figures represent the experience with vaccines which probably were inferior to those in general use in this country.

If we can assume that vaccination is effective against the usual exposure, then we apparently need a better weapon against the severe type of exposure exemplified by the face bite or severe bites elsewhere. It is possible that hyperimmune serum may be useful in these instances. This anti-serum produces protection for a limited time so when it is employed a subsequent course of rabies vaccine must be given. It is now believed that five to seven injections of vaccine may be enough if antiserum has been previously given. It is hoped, but not proved, that the incidence of neuroparalytic reactions following this shorter course of injections will be materially lowered.

Meanwhile, the physician must continue giving vaccine when it is necessary. The only way he can escape the horns of the dilemma is to weigh the relative risks in each case and administer or withhold vaccine in accordance with his best judgment. This makes it imperative to intensify the efforts to improve methods of preventing rabies in man. We must strive especially to bring the disease under control in animals to such an extent that need of vaccination in man may be lessened or even eliminated — as it has been in some other areas.

Hazards and Pitfalls of Anticoagulant Therapy

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Coagulation of blood within an intact blood vessel is distinctly abnormal. Anticoagulants are used for the purpose of maintaining the blood in a fluid state, regardless of the abnormalities which favor intravascular coagulation. They are used in clinical practice to prevent thromboembolism or to prevent extension of thrombosis which has already occurred.

An adequate method for predicting the occurrence or progression of thrombo-embolism does not exist, and therefore many patients receive anticoagulants who do not actually need them. The clinician who uses anticoagulants must treat many patients to save the lives of a few, and to spare a few more patients the consequences of progressive thrombosis. This situation will persist until some method is developed by means of which the occurrence of thrombosis can be predicted or until it is possible to predict with accuracy whether or not a minor episode of thrombosis will progress or cause embolism. Until these goals have been achieved, the physician will need to treat prophylactically those patients who are likely to have or who already have thrombosis. The only alternatives are to ignore the advantages of anticoagulant therapy, to use some other method of treatment, such as ligation of veins, or to accept the consequences of thrombosis. A major challenge to the medical

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profession today is the development of a means of determining the likelihood of thrombo-embolism before it actually occurs.

HEPARIN.—Heparin is expensive, must be given parenterally and requires injections by medical personnel. It can be administered in three ways: (1) by continuous intravenous injection, (2) by intermittent intravenous injection and (3) by deep subcutaneous or intramuscular injection in either an aqueous solution or a slowly absorbed medium.

The continuous intravenous injection of heparin, although theoretically ideal from the standpoint of continuous anticoagulant effect, poses certain problems which make this mode of administration inconvenient and at times impractical. It requires constant and careful supervision of the apparatus and frequent tests of the Lee-White coagulation time. The method is not practical for use for more than ten days.

The intermittent injection of heparin ignores individual differences in tolerance of heparin and also the fact that the method exerts little or no demonstrable effect on the coagulation time for periods longer than two to three hours after each injection. However, in clinical practice this method seems to be effective and does not require tests of the coagulation time.

The use of heparin in a slowly absorbed medium by deep subcutaneous or intramuscular injection has gained in favor, but opinion is divided as to its efficacy and safety. The earlier preparations frequently produced pain at the site of injection. More recent preparations appear to have minimized these disadvantages. Standardization of dosage is difficult because of differences in rate or absorption of the drug, as well as differences in tolerance of heparin. The method requires repeated tests of the coagulation time.

Heparin produces a more profound effect on the coagulation mechanism than does dicumarol. Even in the therapeutic range of anticoagulant effect, there appears to be a greater tendency toward bleeding when heparin is used than when dicumarol is used. If the bleeding is external and detected, the effect of heparin can be stopped quickly, but if it is internal, a dangerous situation may develop before it is recognized.

The effect of heparin can be neutralized by the intravenous injection of 50 mg. of protamine sulfate (salmine). If heparin in a slowly absorbed medium has been used, it may be necessary to apply an ice bag to the site of injection and to repeat the dose of protamine sulfate. If major hemorrhage occurs, blood should be given to replace loss of blood.

COUMARIN COMPOUNDS.—Dicumarol (bishydroxycoumarin) has the advantage of being cheap and easily administered. Disadvantages are delay in adequate effect for one or more days after administration and delay of subsidence of effect for several days after administration has been discontinued. Another disadvantage is the great difference in response among different patients to fixed doses.

In treatment with dicumarol, the aim is to produce and maintain a moderate but not excessive deficiency of prothrombin. The dose must be individualized for each patient on the basis of his or her reaction to certain fixed amounts of the drug which are given initially. The dose must be varied as necessary during the entire period of administration, and it depends on the response of the particular patient being treated.

We use the Magath modification of the Quick test of prothrombin time for prothrombin activity in the blood plasma. The type of thromboplastin used in performing the test is unimportant, provided the prothrombin time reported by the laboratory can be converted into percentage of prothrombin activity. It is considered safe to maintain the prothrombin time within a range of 2 to 2½ times the value for normal plasma, provided the value for normal plasma does not exceed 20 seconds. The values for prothrombin activity with this method would be about 15 to 20 per cent of normal with the method used in our laboratory. However, a therapeutic range of 10 to 30 per cent of normal prothrombin activity usually is satisfactory and relatively safe.

The use of dicumarol is entirely inadvisable unless the laboratory has on hand equipment and personnel to render wholly reliable reports. This constitutes the sine qua non of treatment with dicumarol. To administer dicumarol without adequate and reliable laboratory control is to court disaster from hemorrhage, or to treat a patient inadequately. The same applies to the use of the newer coumarin derivatives, tromexan (ethyl biscoumacetate), and cumopyrin (cyclocumarol).

Tromexan is approximately one fifth as potent as dicumarol, milligram for milligram. It acts

somewhat more rapidly and its effect disappears more rapidly after administration is discontinued. These potential advantages are somewhat offset by greater difficulty in maintaining the prothrombin time within the therapeutic range. Tromexan can be given with dicumarol at the beginning of anticoagulant therapy in order to produce a deficiency of prothrombin more rapidly.

Cumopyrin is two to three times as potent as dicumarol, milligram for milligram. It acts as rapidly as, or slightly more so, than dicumarol and its effect disappears somewhat more slowly after administration is discontinued. To date clinical experience is inadequate for satisfactory appraisal of whether this drug has any definite superiority over dicumarol, but further trial and study are in progress.

An excessive effect of dicumarol may be neutralized by menadione sodium bisulfite (vitamin K) administered intravenously in doses of 36 to 72 mg., depending on the apparent urgency of the situation. Vitamin K_1 or vitamin K_1 oxide in doses of 200 to 500 mg., given either orally or intravenously, is a more effective and rapidly acting antagonist and should be used in cases in which significant bleeding is encountered or in which there is other reason for stopping the action of dicumarol as rapidly as possible. Significant loss of blood should be replaced by transfusion.

CONTRAINDICATIONS TO THE USE OF ANTICOAGULANTS.—Contraindications to the use of any anticoagulant may be summarized as follows: (1) subacute bacterial endocarditis, because of the danger of cerebral hemorrhage; (2) recent operation on the brain or spinal cord, because of severe damage which might follow even minor hemorrhage in these regions, and (3) purpura and blood dyscrasias associated with a bleeding tendency, because of increased tendency to bleed.

Contraindications to the use of dicumarol but not to heparin include: (1) renal failure, (2) hepatic insufficiency, and (3) lack of trained laboratory personnel and of adequate facilities for determining values for prothrombin time. The risk of performing surgical operations or paravertebral sympathetic blocks, or producing spinal anesthesia while anticoagulants are in effect, cannot be too strongly emphasized.

Caution should be employed in the use of anticoagulants or the drugs should be withheld when there are ulcerating lesions of viscera or skin, because of the danger of hemorrhage. There is some increased danger from hemorrhage when anticoagulants are given to patients who are being treated with Wangensteen or Miller-Abbott tubes or who have indwelling catheters or other tubes in body orifices or wounds. Dietary or nutritional deficiencies also call for increased caution in the use of dicumarol. In a considerable number of instances the clinician will need to decide about the administration of anticoagulants on the basis of potential harm and potential good; the decision may be difficult.

DANGER OF HEMORRHAGE.—Whenever anticoagulants are used in therapeutic doses there is some danger of bleeding. We have not used heparin sufficiently long for a sufficiently large number of patients to permit us to judge the incidence of bleeding. We have observed bleeding during the use of heparin in a few instances shortly after surgical operations, and in one instance after myocardial infarction.

Much of the serious bleeding which has been encountered during the administration of dicumarol has been due to gross overdosage of the drug arising from error or disregard for the importance of frequent tests of the prothrombin time; however, even if adequate supervised therapy is employed, there is a small risk of serious local bleeding. One investigator[1] recently reviewed the instances of serious and fatal hemorrhage during the administration of dicumarol which had occurred in a number of institutions since the drug had been introduced. He found that the mortality rate attributable to hemorrhage was 0.18 per cent among 15,500 patients. A number of fatalities occurred in the early years after dicumarol was introduced; similar results probably would not occur now that contraindications to the use of the drug are known more generally and the prothrombin time is determined with greater accuracy.

When an anticoagulant is used, the risk of bleeding among surgical patients, and particularly bleeding from operative wounds, is higher in the immediate postoperative period. However, this risk has been minimized by withholding anticoagulant therapy until the third postoperative day. In an earlier series of almost 2,000 postoperative patients given dicumarol, my associates[2] encountered minor bleeding in 3.4 per cent of cases and major bleeding in 1.8 per cent

of cases. There is, of course, a great difference between major bleeding and fatal hemorrhage. Although marked bleeding occurred about forty times during the course of treatment, death from hemorrhage occurred but twice. Careful study of these two fatalities indicated that fatal hemorrhage could not be definitely attributed to the effect of dicumarol. Among the last 2,000 postoperative patients treated with dicumarol, my associates and I have observed no instances of fatal hemorrhage. Another group of investigators[3] have reported that 3,304 patients were given dicumarol after major abdominal and pelvic surgery without any deaths due to hemorrhage and with only three instances of bleeding sufficient to require the transfusion of blood.

A study of the incidence of bleeding in 288 "medical" patients treated with dicumarol[2] revealed that minor bleeding occurred twice (0.7 per cent) and major bleeding three times (1.0 per cent). In the latter group were two instances of gastrointestinal bleeding, and one instance of severe subcutaneous bleeding. There were no deaths due to hemorrhage.

SUMMARY

Extensive experience has indicated that the anticoagulants, heparin and dicumarol, are useful in medical practice. However, the use of either alone or the two together, particularly over long periods, is far from satisfactory. Heparin is expensive, must be given parenterally, and requires injection by medical personnel. Treatment with dicumarol requires repeated tests of the prothrombin time.

The statements in the medical literature that dicumarol is a "dangerous" drug are unjustified if the drug is properly given. However, unless personnel of the available laboratory are well versed in the pitfalls of determinations of prothrombin time, heparin rather than dicumarol is the safer drug. The clinician is adjured to acquaint himself with the contraindications to the use of heparin and dicumarol as well as the laboratory methods of their control, or else to refrain from using anticoagulants altogether.

CONCLUSIONS

It is apparent that treatment with anticoagulants will not be wholly satisfactory until one is available which is cheap, which can be given orally and which, in identical amounts, will always have identical effects on the coagulation mechanism. Until this desideratum has been achieved, clinicians will need to be satisfied with less than an ideal situation.

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THE PHYSICIANS BULLETIN

In step with the busy schedule of today's doctor, Eli Lilly and Company has conceived an entirely new format for its house publication *The Physician's Bulletin*. Starting in January, 1953, the new "PB" is designed to give brief, concise information in a handy form to the 150,000 doctors who receive it.

The publication changes from its former 8½ x 11 size to a new 5 x 7¾ "pocket-book" size. Also, it has been increased from twenty-four to thirty-two pages. Brevity will be the keynote in the copy, and full-color illustrations will be used throughout. Formerly published six times a year, the new "PB" will be issued ten times a year, appearing every month except August and December.

The Physician's Bulletin is edited by S. O. Waife, M.D., with the assistance of other physicians who serve full-time on the Lilly staff.

Aging

G. E. Wakerlin, Ph.D., M.D.
Chicago

In discussing "Aging", we shall consider the aging process particularly as applied to the human, then diseases of later years, and finally suggestions for achieving better health in later years.

1. Aging Process in Man. Aging may be defined as a biological change which occurs with time and involves alterations in the structure and function of the various body parts, commonly in the direction of decreased capacity and adaptability. Although aging as here defined is fundamentally a biological phenomenon, it obviously has important social and economic implications. Aging is the last of the sub-divisions of the life process, the others being growth, development, and maturation. There are a few biologists who maintain that if the human and other living things were not subjected to various adverse influences in their environment, including disease, immortality on earth would be obtainable. However, the preponderance of evidence supports the concept that aging occurs as a normal life process even in the absence of adverse environmental influences. Indeed, the evidence is good that aging begins with conception and continues through life at a gradually accelerated pace. Thus the arteries of a ten year old child are less elastic than those of a five year old.

In addition to defining aging, we should also define the closely related terms, gerontology and geriatrics. Gerontology is the biological science which deals with the physiological and pathological changes which occur with aging. In its broadest sense, gerontology very properly includes the sociologic and economic aspects of aging. Geriatrics is that branch of medicine which is concerned with the care of older and aged people. Geriatrics, therefore, is a subdivision of gerontology.

From time to time, biologists and physicians discuss the question of the normal human life span. Again, there are a few who contend that barring disease processes and other unfavorable environmental influences, the normal life span for man could be 150, 250, or even more years. Certainly only a small percentage of humans presently dies of uncomplicated old age. Nevertheless, present biological evidence favors the probability that the life span for the human will rarely exceed 100 years, or certainly 125 years, no matter what the future portends for advances in biological and medical knowledge. The few recorded instances of human longevity equalling 150 years are most probably the result of inaccurate vital statistics. Thus the famous English physiologist and physician of the seventeenth century, Dr. William Harvey, who is credited with the discovery of the circulation of the blood expressed doubt in his postmortem report of the reputed age of the oft-cited Tom Parr who was supposed to have lived 152 years. Each species has a more or less characteristic life span which varies from a few minutes in the case of certain insects to 7000 years for certain trees.

As all of you know, our average life span in the United States has steadily increased during the present century, due principally to improved public health and sanitary facilities, decreased infant mortality, and decreased mortality in youth and early maturity from infectious diseases chiefly as a consequence of the sulfa drugs and the antibiotics such as penicillin. The life expectancy for girl babies born today is 71 years and that for boy babies 68 years. Presently our population includes 11,000,000 people over 65 years of age and the predicted numer for 1960 is 14,000,000. On the other hand, there has been no increase in the life expectancy of those who reach the age of 40 in the United States or elsewhere. This is due to the fact that biological and medical knowledge of the diseases characteristic of later years has advanced only moderately

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to date and that treatment of the two principal causes of death in the United States, viz., heart disease and cancer, is still only relatively satisfactory.

While the aging process extends throughout life, it becomes sufficiently advanced after 40-50 years to be apparent to the casual observer. During the latter half of middle age, i.e., from 50-65 years, the changes further accumulate to warrant the designation of old age for those over 65 years. However, strong emphasis must be placed on the fact that biological age and chronological age are not necessarily the same. Some men and women are younger at 65 or 70 than are others at 45 or 50. Moreover, the various organs and body parts do not undergo aging at the same rate. Undue aging of the brain will have more serious consequences for the individual than undue aging of other body parts.

With advancing years, the skin becomes more wrinkled, thinner and less elastic and pigmented areas develop. The hair of the head becomes grey, frequently thin, and sometimes largely absent, whereas curiously enough, the hair of the eyebrows, nostrils, and ears increases in length. The features, particularly the nose, become somewhat heavier, probably as the result of changes in the secretion of the pituitary gland at the base of the brain. The skeletal and other supporting tissues show changes which include a decrease in the calcium or lime content of the bones, slight overgrowth to produce roughened surfaces and edges of some of the bones, atrophic changes in the cartilage or grisel covering the bones, particularly at the joints, and decrease in size, strength and elasticity of the tendons and ligaments which join the bones of the skeleton together. The nervous system and the sense organs associated with it show a decrease in function. Thus the time to react to our environment, such as the change of a traffic light to red when driving an automobile, is increased with advancing years. The number of brain cells decreases and some of the remaining cells develop pigment, although this decrease does not cause significant impairment in the higher intellectual processes of most people over 50 and of many over 65. Furthermore, the knowledge, judgment, and experience resulting from having lived 50 years will usually more than compensate for brain cells lost, so that the important directive work of the world is, from a biological point of view, best placed in the hands of men 45 to 60 years of age. Obviously there are exceptions to this. Skeletal muscle movements which are, of course, directed by the nervous system, are less well coordinated, less rapid, and less accurate than in earlier years. The skeletal muscles decrease in size and strength with advancing years. In part for these reasons but also because of the aging of the heart, blood-vessel, and breathing functions, participants in many sports are considered to be old when they reach the thirties. On the other hand, these aging changes in nervous tissue and muscle do not prevent many artists and skilled craftsmen from successfully pursuing their work into old age. The senses also show certain decreases with advancing years. Best known perhaps is the gradual loss of elasticity in the lens of the eye which goes on throughout childhood and maturity and necessitates the use of reading glasses or bifocals at 45-50. There is also a gradual decrease in hearing for tones of higher pitch and a decrease in the acuity of smell and taste with increasing years.

It is frequently said that a man is as old as his arteries. This statement is based on the fact that at the present time, the Captain of the Men of Death in our Western World, is arteriosclerosis or hardening of the arteries. However, it should be emphasized that the kind of artery hardening which produces death is not a part of the normal aging process but is really a disease which will be discussed in the next section of this lecture. Nevertheless, the arteries do become less elastic with passing years and the heart muscle carries on with a decreasing reserve. Moreover, the lungs function less adequately in bringing oxygen to the blood in the lungs due to a decrease in the elastic tissue in the lungs and other factors. The respiratory tract reserve, i.e., ability to hyperventilate the lungs and supply greater amounts of oxygen under conditions of increased demand, such as exercise, is also gradually reduced with age.

The gastrointestinal tract likewise shows evidences of aging. During the first half of life, permanent teeth are lost chiefly as a result of dental caries, the cause, prevention, and treatment of which are still insufficiently known. In later years, teeth are lost through caries but more through periodontal disease, i.e., inflammatory and other changes about the tooth. It is a sad commentary that at the age of 50, 30

per cent of American people need complete artificial dentures. The stomach and bowel, as well as the liver and the pancreas, show gradual decreases in functions and size with the years. Thus the lining of the stomach becomes thinner and secretes less hydrochloric acid, so that by 50, one-quarter of humans have no acid in their gastric juice. This is not particularly serious since other digestive enzymes in the bowel will cover for the stomach. The smooth muscle of the stomach and bowel shows a gradual but modest decrease in size and motor activity, yet the previous bowel rhythm is frequently maintained in later years. Barring frank disease of the gastrointestinal tract, this system is usually capable of carrying on for many years after some other system of the body, usually the heart and arteries has become sufficiently crippled in function to produce death.

After 50, the size of the skeletal muscles and other organs, such as the liver, kidney, pancreas, and glands of internal secretion, decreases somewhat and the amount of fatty tissue, which is chemically much less active, increases. Hence the basal metabolic rate which measures the biochemical activity of the body is somewhat decreased with advancing years. While nutritional deficiencies involving vitamins, minerals, proteins, and/or calories occur occasionally after 50, as they do prior to this age in the United States, the most common nutritional abnormality after 50 is over-nutrition or obesity. And this is so despite the fact that well-publicized statistics show that those who are overweight have their life expectancy significantly shortened. The kidneys show a gradual but slight decrease in their various functions, chief of which, of course, is ridding the body of the waste products of its activity. The urinary bladder ordinarily continues to empty satisfactorily, except when an enlarged prostate gland may interfere with this function in otherwise normal older men.

The endocrine glands or glands of internal secretion have long been associated in the lay mind with aging and more particularly with the possibility of reversing the process. In general, the glands of internal secretion which produce chemical messengers to influence and regulate the activities of many organs and tissues of the body, show a gradual and slight decrease in function with passing years. Among these are the thyroid in the neck, the pituitary at the base of the brain, and the adrenal glands above the kidney. Rarely there occurs a condition of premature or tremendously accelerated aging as the result of which a five year old child may have the appearance of a 70 year old. In this disease, known as progeria, the pituitary gland is markedly deficient in function. At 45-50 usually, the ovaries cease producing eggs and hence menstruation which is the outward expression of the process intended to receive the fertilized egg, ceases. There is also a decrease in the sex hormones produced by the ovary. This is a normal part of the aging process and the rapid aging of the ovaries at this time is not paralleled in other organs of the body. Certainly this change should be considered as normal or physiological and such an understanding by some women may be sufficient to enable the avoidance of hormone or other therapy during the menopause. In the male, testicular function undergoes a more gradual decrease. Despite many attempts to rejuvenate men and women through sex hormone therapy and various surgical operations, there is incontrovertible evidence that the normal aging of various organs and tissues has little relation to the gonads and sex functions. Accordingly, it is scarcely surprising that these procedures have been quite unsuccessful in slowing or reversing the aging process.

II. Diseases of Later Years. Obviously people over 50 are subject to the various diseases which are found in those who are younger. Thus whooping cough may occur after 50. When infectious diseases such as pneumonia or tuberculosis occur in older individuals, as would be expected, the recovery period is somewhat longer. Recovery from the effects of accidents, which it should be remembered now constitute the third cause of death in the United States, is also slower. Moreover, in later years, one or more of a group of diseases may occur which are uncommonly seen in earlier years. These diseases are likely to be gradual in development and chronic and progressive in course, with considerable individual variation. Sometimes more than one of these conditions may be present in the same person. They are frequently spoken of as degenerative diseases, although it should be emphasized again that they are definitely not a part of the normal aging process. The chief members of this group are heart and kidney disease, cancer, and arthritis or rheumatism.

The principal causes of heart and kidney disease in later years are high blood pressure or hypertension and hardening of the arteries or arteriosclerosis. Together these diseases now account for more than one-half of all deaths in the United States. Ninety-five per cent of all patients with high blood pressure have their increased blood pressure as the result of incompletely or poorly understood cause or causes. Five per cent have their hypertension due to a known cause such as infection of the kidney or tumor of the adrenal gland. It is important to recognize these hypertensions of known cause since in some patients the cause can be eradicated and the high blood pressure completely cured. Our treatment of the common form of high blood pressure, on the other hand, is less satisfactory, although some patients are cured and others considerably improved by present methods of treatment. While we are not sure of the exact cause of the common form of high blood pressure, we have evidence that the nervous system, the endocrine glands, particularly the pituitary gland and the adrenal glands, and the kidney are involved in the causation. In some way these organs cause constriction or narrowing of the smallest or microscopic arteries of the body. As a result, the heart must pump more forcibly to move the blood through the narrowed vessels, thereby increasing the pressure of the blood or blood pressure in the larger arteries. Obviously the work of the heart is increased by hypertension. Also hypertension accelerates the progress of hardening of the arteries which is not infrequently present in patients with high blood pressure, including sclerosis and narrowing of the coronary or heart arteries. As a consequence, the heart may function inadequately. The brain arteries are thin-walled and sometimes brain hemorrhage or stroke occurs. Less frequently there is inadequacy of kidney function. However, it should be remembered that while these complications of high blood pressure do occur, there are patients with hypertension whose condition shows little change from year to year and who live out their normal life span and die of old age. High blood pressure has been produced experimentally in dogs by partial constriction of the renal arteries or arteries supplying the kidneys. This hypertension in practically all respects so far studied resembles the common form of human hypertension which suggests, but does not prove, that the kidney may be involved in the causation of hypertension in man. Our laboratory has recently developed a successful treatment for experimental hypertension in the dog but unfortunately several more years of work are necessary before it will be ready for possible trial in man. Nevertheless a number of important advances in the treatment of high blood pressure have been made in recent years. New drugs are presently being tested in treatment. A low salt diet produces what in effect is a cure in about 10 per cent of patients treated. And likewise, a nerve cutting operation effects what is tantamount to a cure in about 10 per cent of patients, and appears to improve the general condition and prolong the life span of others.

Hardening of the arteries or arteriosclerosis is a condition in which there is thickening of the wall of the arteries with accumulation of fatty substances and calcium, often with narrowing of the lumen of the vessel. Especially involved are the aorta which is the great artery coming off the heart and certain of its important branches; viz., the coronary arteries which supply the heart muscle with blood, the cerebral or brain arteries, and the leg arteries. The narrowing of the arterial lumen reduces the blood-supply to the given organ or body part and thereby produces interference with the normal activity of that organ. Thus there may be heart pain if the coronaries are narrowed, altered thinking if the cerebral arteries are too narrowed, and leg pains particularly on walking from narrowed leg arteries. The lining of the narrowed arteries is frequently roughened and a blood clot may form and still further reduce the blood supply to the organ or part. This is what happens in coronary thrombosis or so-called heart attack. The chief reason why the life expectancy of American men is three years less than American women is the greater number of deaths from heart attacks in the former. The basic cause of hardening of the arteries is not yet known, although recent work shows that certain changes in the way the body handles fatty substances are present. Experimental hardening of the arteries has been produced in various laboratory animals and the study of the experimental disease is yielding important information. Most important of all we have learned that hardening of the arteries is a reversible process which means that not

only will we some day be able to prevent the disease and to stop its progress in man but also to bring about its disappearance or cure. Recent work shows that certain drugs are of value in the treatment of human arteriosclerosis. This is likewise true for a nerve cutting operation in selected patients. Presently there are important studies being conducted on treatment with certain food substances which are fat antagonists and on treatment with a low fat diet.

The Illinois Heart Association, the Chicago Heart Association and the American Heart Association are conducting an educational campaign to inform the public concerning diseases of the heart and bloodvessels. An important part of the educational effort of the Chicago Heart Association is an excellent exhibit on the heart which is intended to enable each of us to "live with his heart longer through understanding it better". This exhibit, which was opened to the public in October, is the most comprehensive on this subject of any in the world.

The second major cause of death in the United States is cancer, which like high blood pressure and hardening of the arteries is on the increase since more people are surviving beyond 40 when cancer takes its greatest toll. Cancer is a disease found in many species of animals and even in plants. A cancer begins as a single body cell or group of cells which for poorly understood reasons start to grow independently and at the expense of the rest of the body. Some one has said that cancer is a wild growth of lawless and parasitic gangster cells. Each of us begins life as a single cell and consists of about 200 billion cells at birth, and of trillions of cells as an adult. Cancer cells have abnormal power to reproduce themselves and as a result cause a tumor or swelling in the body. There are many kinds of cancer, depending upon the type and location of the body cells which take the path of wild, lawless, destructive growth. In women, the most common sites are the breast, the uterus, the skin, the bowel, and the stomach; in men, the most common sites are the skin, the stomach, the prostate, the bowel, and the lung. As a cancer grows, it invades and destroys surrounding tissues and body parts. Particles of the original cancer break off and are carried by the blood and lymph streams to other body parts where new cancers are started. These so-called cancer metastases in turn grow and destroy tissue and otherwise interfere with body functions. The ultimate cause or causes of cancer are presently unknown, although we are acquainted with certain auxiliary or contributing factors. The most important of these is chronic irritation of some body part, such as the lip by a warm, clay pipe. However, many areas of chronic irritation do not develop cancer. The nature of cancer and its tendency to spread to other tissues and organs, makes early diagnosis and treatment of paramount importance. Hence, everyone should know the seven danger signals of early cancer which have been widely publicized by the American Cancer Society. (i) A persistent lump or thickening anywhere in the body, especially in the breast. Many such lumps are not cancer. (ii) An irregular bleeding or discharge from any body opening. (iii) Persistent indigestion, particularly after the age of 40. (iv) Any sore on the body which does not heal promptly, particularly about the mouth. (v) A sudden change in the form or rate of growth of a mole. (vi) Persistent cough, chronic hoarseness, or difficulty in swallowing. (vii) Any significant change in bowel habits, either persistent diarrhea or constipation. Any of these signals may be due to causes other than cancer, but competent medical opinion should be sought. Pain, loss of weight, and general weakness are late signs of cancer. Patients with early, curable cancer ordinarily look and feel relatively or completely healthy. The present methods of treating cancer which are surgery, radium, and x-ray are highly effective in early cancer, but much less so in advanced cancer. The complete conquest of cancer will come only through intensive and extensive biological and medical research.

Arthritis or rheumatism is presently responsible for the physical incapacitation of more people in the United States than any other disease; viz., 7,000,000. Arthritis is not ordinarily responsible for death but does cause varying degrees of discomfort, pain, and disability. There are several types of arthritis which have significance from the medical but less so from the lay point of view. In addition to the pain and disability, certain deformities may occur. Treatment of certain forms of arthritis with

ACTH and cortisone has proved most helpful in some patients. Other types of therapy are also of value. Here again, the causes of the more common forms of arthritis are presently unknown and continued biological and medical research is the only avenue of solution.

We have already mentioned the fact that various infectious diseases may occur in older people as well as in young, and we cited as examples, pneumonia and tuberculosis. Modern medical treatment of both of these diseases is relatively satisfactory and this is particularly true of pneumonia. Indeed, the incidence of death from pneumonia in later as well as earlier years has declined remarkably since the advent of the sulfa drugs and the antibiotics. We have already mentioned that the lungs function less adequately in bringing oxygen to the blood in the lungs due to a decrease in the elastic tissue and other factors and that the respiratory reserve is gradually reduced with age. Sometimes these changes become so pronounced as to constitute a disease known as emphysema. Another condition which is not uncommon in later years is chronic bronchitis, an inflammatory disease of the air passages of the lungs. Both of these conditions respond to medical treatment.

People in later years are sometimes subject to certain diseases of the gastrointestinal tract. These include inflammation of the gallbladder and gallstones, ulcer of the stomach or of the first part of the bowel, dyspepsia, and constipation. Gallbladder disease and sometimes ulcer may require surgery, but the other conditions can be effectively treated medically.

We have already mentioned the fact that the most common nutritional abnormality after 50 is overnutrition or obesity. Obesity is well-known to be associated with an increased incidence of high blood pressure and hardening of the arteries as well as sugar diabetes. Occasionally obesity is the result of a disturbance in the glands of internal secretion such as the thyroid, but mostly it results from eating in excess of body need. Reducing diets which are both palatable and effective are available and should be followed under medical supervision. Certain reducing drugs and pills are dangerous and other preparations and devices are senseless and ineffective. It is unfortunate that our pure food and drug laws are inadequate in relation to this problem and fail to prevent certain flagrant mis-information which is presented to the public through advertising media.

Sugar diabetes, when it occurs in later years, may be due to hardening of the arteries and decreased blood supply to the pancreas which manufactures insulin, one of the important hormones or internal secretions controlling the burning or utilization of sugar and fat in the body. Sugar diabetes in older people is usually mild or moderate in degree and ordinarily well controlled by diet, insulin, and other medical care. Treatment of diabetes is important because untreated diabetes accelerates hardening of the arteries, thereby establishing a vicious circle.

In closing our discussion of diseases of later years, we emphasize the fact that when symptoms and signs of disturbed health appear after 50, they should not be considered as part of the aging process and disregarded. Frequently, such complaints are due to disease which can be cured, controlled, or at least ameloriated by competent medical care.

III. Better Health in Later Years. Some pessimists have pointed out that a life span of 30 years for the human is sufficient to propagate the race and even to permit notable contributions to society. Outstanding examples of those who made notable contributions during such a short life span, of course, are Jesus, Spinoza, Raphael, Mozart, Keats, and Shelley. Moreover, the life expectancy of approximately one-half of the people in the world today, principally those of Asia and Africa, is no more than 30 years. Nevertheless, humans as a rule desire long life and certainly good health. That a long life expectancy can be advantageous to a society is evidenced by the notable contributions which are possible in later years and old age. Conrad, for example, wrote his first novel at 50, Edison continued to invent after 70, Goethe wrote "Faust" at 80, and Clara Barton, the founder of the Red Cross, continued her important work beyond 90. The desire for increased longevity has been apparent through the ages. Several centuries ago, it was expressed in Ponce de Leon's search and more recently in Hilton's "Lost Horizon".

At present, the most important factor in determining our life span is heredity. Indeed, it has been pointed out that one can predict

his life expectancy reasonably accurately by taking the average of the life spans of his four grandparents. The accuracy is somewhat increased if the life spans of one's parents can be averaged in. Certain families are long lived, others are short lived. However, it must be emphasized that any given individual may prove to be a notable exception to these generalizations. When we understand the biology of aging better than at present, we may very well be able further to increase the life span of even long lived families. Certainly, there is no question but that a better understanding of the causes, mechanisms, prevention, and treatment of diseases of the heart and arteries and kidneys and of cancer will considerably extend the span of short lived families. It should be remembered that when we say there is an hereditary factor in the causation of high blood pressure and of hardening of the arteries, we have not explained this factor. Obviously heredity must operate through altering body mechanisms in such a way as to bring on these diseases and it is the responsibility of medical and biological research to determine what these mechanisms are. Thus we know that hemophilia or bleeder's disease is hereditary but we also now know that the blood fails to clot because of the deficiency of a certain chemical in the blood. When medical science once learns to cure and prevent high blood pressure, hardening of the arteries, kidney disease, cancer, and rheumatism, the life span of many in the United States will be greatly prolonged with accompanying good health.

Our aim in later, as well as in earlier, years should be not only to minimize the incidence of disease but also to strive for a maximum of health. In the past, even some physicians have been satisfied with the absence of disease in their patients. Today, however, there is increased recognition of the concept that there are levels of health and that our goal should be a maximum of good health rather than a minimum of disease. Rules of hygiene recommended for the young are even more applicable to older people. They should include attention to the following: adjustment to the environment, nutrition, exercise, sleep, sex functions, and periodic medical evaluation. Let us consider each of these briefly. Proper mental and physical adjustment to changes produced by aging is necessary. Decreases in physical strength, agility, and dexterity are well compensated for by greater experience, better understanding, and sounder judgment. Early childhood training among other factors plays an important role in determining adjustment to aging. It is also interesting to note that in Raymond Pearl's analysis of 2,000 over 90, placidity of temperament was an outstanding quality. Certainly there is evidence that frequent and sustained emotional tensions accelerate the aging process.

Adequate nutrition is just as necessary as in earlier years. The diet should include such foods as milk, meat, fish, eggs, fruits, and vegetables which contain important vitamins and minerals. All people, or at least those responsible for the planning of meals, should be familiar with the basic seven food groups and the number of daily servings from each. People of all ages should realize that optimal nutrition cannot be achieved by one good evening meal after a coffee and doughnut breakfast and a soft drink and sandwich luncheon. The idea that a deficient diet can be compensated for by one, two, or three vitamin pills per day must be laid to rest. Too much emphasis can not be placed on the facts that vitamins are best obtained in natural foods, that vitamin pills should be reserved for medical needs on a physician's prescription, and that under certain circumstances vitamin pills may even be harmful. Good teeth or properly fitting dentures are, of course, of considerable assistance in the obtainment of optimal nutrition.

After 50, physical exercise should be moderate in type and amount. For example, it is golf rather than tennis. As a matter of fact, walking is an excellent form of exercise and the several miles per day which most of us accomplish in the ordinary routine of things is sufficient. Strenuous exercise is definitely undesirable for men and women over 50, principally because of the strain placed on the heart and arteries.

After 50, it becomes increasingly important for the individual to obtain the amount of rest and sleep which is necessary for his best health and work. With few exceptions the amount of sleep required after 50 remains unchanged even though some physiologists have maintained that the requirement decreases with age. This is

probably explained by the fact that older people are likely to catnap during the day, thus decreasing the number of hours of sleep necessary at night. The restoring effects of rest and relaxation even without actual sleep are considerable and should be remembered when there is occasional insomnia. Persistent insomnia, of course, should lead to medical advice.

We have already referred to the menopause in women and to decreasing sex activity in men after 50. However, the sex function is still important after 50 both in its mild and more overt forms. Even in the sixties and seventies there are needs and desires which should be better understood by the children of widowers and widows who wish to remarry.

A periodic physical examination is more urgent after 50 than before. Prior to 50 once a year may be regarded as sufficient; after 50, once every six months is preferred. If there is evidence that aging is proceeding at too rapid a pace, the physician can offer helpful advice. If incipient disease is present, the physician may either effect a cure or delay the progress of the condition. In any event, it is important to follow medical advice. If such advice includes surgery, there should be no hesitance. With modern preoperative and postoperative care and advances in surgical techniques and anesthesia, even elective or optional surgery such as hernia repair, may be undertaken with complete confidence not only for those of later maturity but even of advanced years.

In closing, may I point out that while the millenium of maximum longevity with optimum health for the human species is far from achievement presently, medical and biological research may place this goal within the grasp of man in a century or less. If and when this happens, it is to be hoped that man will have made comparable progress in the solution of his major social, political, and economic problems. Only thereby can the full significance of maximum health and longevity be realized.

Trichloroethylene in General Practice

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In recent months considerable interest has been created in the analgesic and anesthetic agent "trichloroethylene". Its use in this country is steadily increasing both in anesthesiology and as an analgesic agent in dentistry, obstetrics, and minor surgery. It therefore is timely to survey the properties and applicability of this agent, as well as its limitations and dangers. Our clinical experience with trichloroethylene dates back to 1943 and comprises well over one thousand administrations.

History. Trichloroethylene has been known since 1864, and has long been used in industry for such processes as dry-cleaning, dewaxing of lubricating oils and degreasing of metals. The trichloroethylene used for these purposes is a relatively impure substance, and prolonged exposure was often followed by such toxic manifestations as giddiness, vomiting, optic neuritis, and nerve palsies. The nerve most commonly affected was the trigeminal nerve in all its branches, and based on this fact it was suggested in 1928 that trichloroethylene be tried in the treatment of trigeminal neuralgia.[1] This line of therapy proved to be effective,[2] although it now seems doubtful whether it is due to a specific

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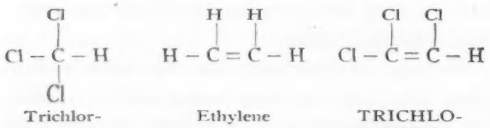
Trichloroethylene used by the authors has been mainly Trimar® which has been generously supplied by Ohio Chemical and Surgical Equipment Co. Earlier experience has been gained by the authors in Great Britain with Trilene®, product of Imperial Chemical Industries. Cyprane inhalers have kindly been supplied by the Ohio Chemical and Surgical Equipment Co. and Duke inhalers by Ayerst, McKenna, and Harrison.

action of the agent on the trigeminal nerve; it rather seems to be the expression of a state of general analgesia which is so marked a feature of trichloroethylene. In 1934 Dennis E. Jackson first suggested trichloroethylene as an anesthetic and analgesic agent,[3] and in the following year he reported favorably on 300 cases.[4] In 1942 Hewer published his first series of 400 cases in Great Britain,[5] and since then the agent has been used in well over one million cases in Great Britain alone. In 1943 Waters, Orth and co-workers[6] reported on the use of trichloroethylene in this country, using it as the sole agent for deep general anesthesia. Their report which stressed the occurrence of undesirable effects on cardiac automaticity was largely instrumental in delaying acceptance of the agent in the United States. The long, vast, and on the whole happy experience of British and later of Canadian anesthetists now compels us to re-evaluate this agent, accepting it as an established fact that trichloroethylene is unsuited as the sole agent for the attainment of deep surgical anesthesia and muscular relaxation.

Physical Properties. Trichloroethylene as commercially available for anesthesia is a highly purified product quite unlike its industrial cousin. It is a colorless liquid, to which is added a blue dye for purpose of identification. Its smell is not unlike that of chloroform, but lacks the pugency of that agent.[7] The drug has been likened to chloroform in many ways, its formula resembling both chloroform and ethylene.



Trichlormethane (Chloroform) — Ethylene — TRICHLOROETHYLENE

With a boiling of 86.9° C at 760 mm Hg pressure the agent is little volatile at room temperature. This makes its administration by the open mask difficult, yet possible. It has a specific gravity of 1.47, and its vapor density of 4.54 makes it 4½ times as heavy as air. One of the great advantages of trichloroethylene is the fact that under clinical conditions it is non-explosive and non-flammable when mixed with air at room temperature, a most desirable and only too rare feature in any inhalation anesthetic agent. When mixed with oxygen, a narrow band of flammability exists, but this is well out of anesthetic range, being approximately 10% trichloroethylene, and may thus be ignored for all practical purposes.[7] However, in the presence of an open flame, diathermy, etc., traces of phosgene are likely to form from the decomposition of trichloroethylene. If inhaled, these breakdown products may prove dangerous. This is particularly so if smoking is the cause of such decomposition, since then the entire breakdown products are inhaled. Trichloroethylene also decomposes in sunlight and if exposed to air; it therefore is supplied in colored bottles and should be kept firmly stoppered and protected from heat and light. In decomposing, trichloroethylene oxidizes to dichloracetyl chloride, with traces of carbon monoxide, hydrochloric acid, and phosgene forming. In order to retard decomposition, 0.01% thymol is added to the product commercially available for anesthetic purposes. Trichloroethylene mixes freely with diethyl ether without chemical reaction, but is decomposed in the presence of soda lime. In this country the substance is marketed under the trade names of "Trimar"® and "Trilene"®.

Pharmacology. Trichloroethylene being somewhat of a hybrid between chloroform and ethylene, one may expect it to exhibit some of the properties of both these agents, as indeed it does. Broadly speaking, it combines the potency of chloroform with the absence, in clinical doses, of viscerotoxic effects which is a feature of ethylene. As with chloroform, the simultaneous administration of epinephrine is not permissible where trichloroethylene is being used, on account of the likelihood that severe cardiac arrhythmias may develop which may even lead to ventricular fibrillation and death. In fact, not only epinephrine but other chemically similar substances should not be used; drugs such as Vasoxyl® and Neo-synephrine® are available for vasopressor effect and may be used.

It will be remembered that all general anesthetic agents, before they cause surgical (stage 3) anesthesia, will make the patient traverse a stage of general analgesia (stage 1) and one of excitement or delirium (stage 2). While the second stage is somewhat under the control of the anesthesiologist and may be modified or totally abolished by adequate preparation of the

patient and by sedation, the stage of general analgesia depends upon an inherent property of the anesthetic agent which is being used. With some drugs the stage of general analgesia is short and ill-defined, while with others it may be produced and maintained with relative ease; such agents are valuable for their analgesic properties from a clinical point of view. Trichloroethylene is one of those which possess great analgesic properties and a wide range of general analgesia. With trichloroethylene it is possible to maintain a state of general analgesia for a considerable length of time for the alleviation of pain or the accomplishment of certain minor surgical procedures. With the establishment of surgical analgesia the patient experiences a feeling of warmth, well-being, and exhiliration; very frequently the whole period of analgesia is blanketed out from the patient's memory by a state of amnesia.

Trichloroethylene is a potent agent, and it is therefore a matter of comparative ease to attain true surgical anesthesia with the drug. Concentrations as low as 0.5 — 1.5 vol. % will suffice. However, only light general anesthesia is indicated with trichloroethylene alone, as in the concentration required for deep anesthesia the drug exhibits certain undesirable features. Muscular relaxation must never be attempted with trichloroethylene alone, but may of course be obtained by the injection of one of the muscle relaxant drugs, or by the addition of some other inhalation agent of sufficient potency and safety.

It has been stated previously that deep levels of anesthesia with trichloroethylene are neither safe nor desirable, and it will now be necessary to consider the pharmacological reasons for this. There can be no doubt that the deeper the plane of anesthesia with trichloroethylene, the more frequent cardiac arrhythmias will be encountered; most commonly these arrhythmias take the form of auricular extrasystoles, but ventricular extrasystoles and ventricular multifocal tachycardia may occasionally be encountered. The latter is usually considered a precursor of ventricular fibrillation, and is therefore an occurrence of grave significance. However, a number of authors have been at pains to point out that when ventricular multifocal tachycardia occurs during trichloroethylene anesthesia, it is by no means a precursor to ventricular fibrillation, as it would certainly be if chloroform was being administered.[8,9] Indeed, the cases of cardiac arrest under trichloroethylene are very few and far between. In 1948 Hewer reported that only two possible cases of cardiac failure had been reported from the use of trichloroethylene,[10] and in these the role of the drug in the causation of the disaster had been far from clearly established. In a recent British analysis[11] of 400 deaths associated with anesthesia of any kind, only 4 (or 1%) were associated with the administration of trichloroethylene; no data are given in this analysis concerning the patients' condition, type and length of operation, depth and management of anesthesia. But even without this information the relative harmlessness of trichloroethylene is evident, as only 1% of all deaths were associated with this agent which is almost certainly used in more than 1% of operations in Great Britain.

Another undesirable feature of trichloroethylene, especially if the drug is administered in high concentrations, is the occasional occurrence of marked tachycardia and tachypnea. The exact etiology of this tachycardia is still not precisely understood. The tachypnea is believed to be due to sensitization of the Hering-Breuer reflex. On rare occasions tachycardia and tachynea may occur during light anesthesia, or may be associated with some degree of oxygen lack or carbon dioxide excess. The condition may be relieved by lightening anesthesia and by improving tissue oxygenation; on occasion, however, it may persist despite these measures, and it then becomes necessary to effect a change-over to some other drug or technique. Ether is very satisfactory in these cases, and it is a strange fact that when trichloroethylene administration is again resumed after the interlude with ether, tachypnea does not usually return. Bradycardia and arrhythmias are associated with overdose; Bradycardia denotes myocardial depression.

Induction of anesthesia with trichloroethylene is both rapid and pleasant, it having practically no irritating effects on the respiratory passages in clinical concentrations. Salivation is not increased, and nausea and vomiting are conspicuously absent. One case of liver necrosis has been recorded in the literature[12] but the role of trichloroethylene in this complication was at least doubtful. Trichloroethylene has so often been compared with chloroform that it is necessary to stress that in animal experiments it has

Figure 1: The Cyprane Inhaler.

proved less toxic than chloroform; [13,14] it has also been stated that its toxic effects on the liver are not only less than those of chloroform, but also less than those of ether.[15] Renal function is not significantly changed, and disturbances of metabolism do not seem to exceed those generally associated with general anesthesia. Changes in blood pressure are neither significant nor consistent, but capillary oozing is reduced, and is rather reminiscent of what used to be seen under chloroform anesthesia. Trichloroethylene is eliminated unchanged from the body, mainly through the respiratory tract. Recovery from anesthesia is usually rapid, although traces of the drug may still remain in the blood stream after full recovery has taken place. However, it must be remembered that trichloroethylene is a lipophilic agent; after prolonged or unduly deep anesthesia, the more saturated fatty tissues, releasing the agent slowly, will tend to maintain a higher blood level after administration has been discontinued. Hence, recovery will be proportionally delayed.

Analgesia with Trichloroethylene. For the purposes of general practice, trichloroethylene is outstandingly indicated when used as an analgesic agent because of its remarkable safety and portability. For analgesia, a trichloroethylene — air mixture is usually administered. This can be done most conveniently by means of a special inhaler. A great number of such instruments have been designed; of these the Cyprane and the Duke inhalers are the ones most popular in this country at the present time. (See figures) Analgesia can also be achieved by means of the open drop technique, but because of the low volatility of the drug this method is somewhat more cumbersome, difficult and hazardous and much less precise. In the Cyprane and Duke inhalers, and in most of the other types which have been constructed from time to time, air is being drawn over a quantity of trichloroethylene. The amount of air which passes over the surface of the drug is regulated by means of a dial; the remainder of air is by-passed direct to the patient. These inhalers deliver concentrations which are analgesic for the average patient under average climatic conditions, but are capable of producing light general anesthesia in the full-on position. Each inhaler is provided with means of locking the dial in the position which has been found to be satisfactory for analgesia in a particular patient, thus anaglesia may be self-administered by the patient who cannot by himself alter the concentration of the anesthetic agent. All inhalers are suitable for self-administration of analgesia; should anesthesia supervene, the mask or the in-

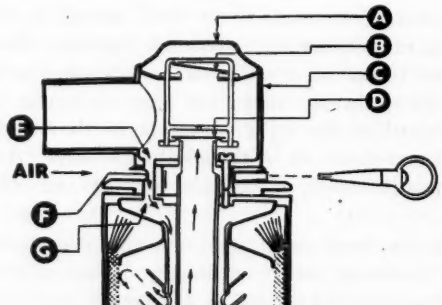


Figure 2: The Cyprane Inhaler (schematic cross-section). As the patient inspires, air is drawn through the holes in the mixture-adjusting collar F. It is then directed down into the Trimar chamber through slots in G, as shown by the arrows, or directed upwards to the face piece through slots in E, or through both, depending upon the setting of the mixture-adjusting collar. Rotation of the mixture-adjusting collar alters the relative areas of opening of the ports in G and E, and consequently more or less air bypasses the Trimar chamber. On expiration, the gases are directed to the atmosphere through the valve B and holes in the side of the cover A. The expired gases are prevented from passing through the Trimar chamber by the non-return valve D. C indicates valve housing tube.

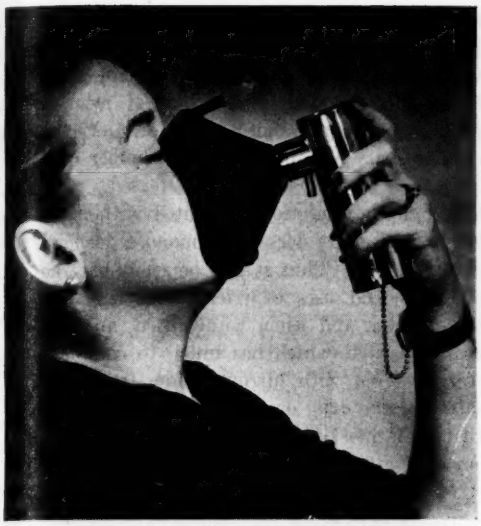


Figure 3: The "Duke" University Inhaler

haler will slip from the patient's grasp; he will therefore then breathe air only and will promptly regain consciusness. Those inhalers which are being held in the patient's own hand, such as the Cyprane and the Duke models, may be strapped to the patient's wrist, protecting the instrument from damage if it should slip from his grasp. Analgesia of this type can be maintained for any reasonable length of time without fear of undue deleterious effects upon the patient. No rebreathing takes place where the analgesia inhalers are used; hence carbon dioxide accumulation does not occur. Air being drawn over the analgesic agent, hypoxic concentrations are likewise avoided. The importance of length of administration and dosage has been mentioned previously; it follows that as analgesia is long continued, smaller concentrations of drug will be required to maintain the analgesic state. It must also be remembered that trichloroethylene passes the placental barrier, and may therefore be the cause of some drowsiness of the newborn if administration of the agent has been very prolonged and continuous.

Trichloroethylene analgesia finds a great variety of uses. Among the more important are the relief of pain during the first stage of labor, dental and minor surgical procedures; as examples of the latter the following could be cited: change of painful dressings, incision of thrombosed hemorrhoids, myringotomy, cystoscopy and other endoscopic procedures, painful examinations, suture of small and superficial lacerations, manipulation of minor fractures, supplement to local and spinal anesthesia, etc., provided epinephrine and similar drugs are avoided. The method is particularly useful in office practice where general anesthesia for these and similar procedures presents great difficulties and is attended by hazards not encountered if consciousness and reflex activity remains unimpaired, as is the case in general analgesia. Also, the portability of the inhaler makes for easy use under emergency conditions outside the office.

General Anesthesia with Trichloroethylene. The use of trichloroethylene for general anesthesia is somewhat beyond the scope of this paper, as it falls within the domain of the anesthetist or anesthesiologist. It is an operating room procedure, except in those rare instances where adequate facilities for general anesthesia are available in a physician's or dentist's office. The subject will therefore be only touched upon in this discussion.

Owing to the absence of irritating effects upon the respiratory tract, induction of anesthesia with trichloroethylene is both fast and pleasant unless concentrations are increased with undue

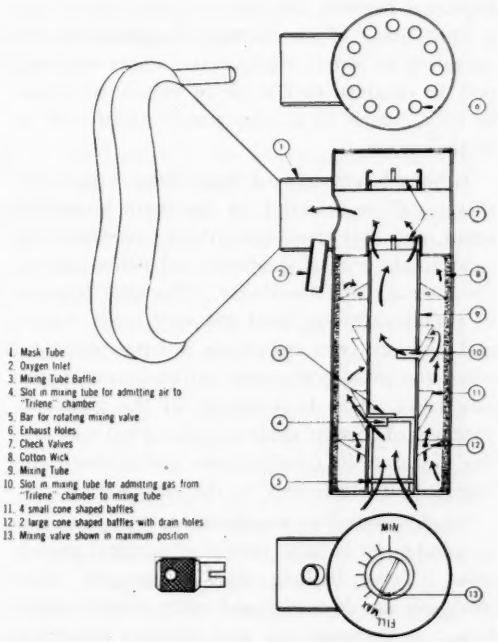

1. Mask Tube
2. Oxygen Inlet
3. Mixing Tube Baffle
4. Slot in mixing tube for admitting air to "Trilene" chamber
5. Bar for rotating mixing valve
6. Exhaust Holes
7. Check Valves
8. Cotton Wick
9. Mixing Tube
10. Slot in mixing tube for admitting gas from "Trilene" chamber to mixing tube
11. 4 small cone shaped baffles
12. 2 large cone shaped baffles with drain holes
13. Mixing valve shown in maximum position
MIN
7113

Figure 4: The "Duke" Inhaler (schematic cross-section).

rapidity. Emergence from anesthesia is likewise quick if undue depth of anesthesia or very long administrations are avoided; the reasons for this have been previously discussed. Emergence also is not commonly attended by unpleasant side effects. Salivation is minimal, even where belladonna derivatives have not been administered.

It should be recalled that trichloroethylene reacts with the soda lime of the carbon dioxide absorption unit of closed circuit anesthesia; hence, the closed circuit technique cannot be employed. This will necessitate the adaption of most anesthetic machines to a non-rebreathing system. The use of epinephrine and similar drugs is to be avoided.

Trichloroethylene is hardly ever indicated as the sole anesthetic agent, but rather should be used as an adjuvant to some other general anesthetic. The fact that it is non-explosive renders it eminently suitable as an adjuvant to nitrous oxide. Very limited amounts of the drug (0.5-1%) will suffice and will enable one to maintain nitrous oxide anesthesia with 30 and even up to 50% oxygen. Thus the threat of hypoxia is removed from nitrous oxide anesthesia; an even level of anesthesia can be kept throughout; yet, recovery is not markedly delayed. Such anesthesia is of course not limited to situations of explosive hazards, but may be used where ever a light plane of anesthesia will suffice for the operation at hand. Relaxation, where required, may be obtained by the use of muscle-relaxants, or by a change to a more potent agent such as diethyl ether.

It must be emphasized that nitrous oxide anesthesia still is intended as the main anesthetic agent, and that trichloroethylene only serves the subordinate role of stabilizer and potentiator of the nitrous oxide anesthesia. The total amounts of trichloroethylene used are very small indeed, and recovery from anesthesia is little prolonged when compared with mere nitrous oxide-oxygen anesthesia. One thus enjoys all the many advantages of nitrous oxide anesthesia without having to endure its disadvantages and without adding undesirable factors to the anesthesia.

Trichloroethylene anesthesia as just described is suitable for a large variety of surgical procedures. These include those mentioned when analgesia was discussed, and many others in addition. As instances one may mention operations on the extremities, incision and drainage of abscesses, gynecological examinations and obstetric procedures not requiring profound relaxation, tonsillectomy, circumcision, orthopedic manipulations, debridement and suture of lacerations, plastic operations, and many more. If muscle relaxants are administered, the number of indications is correspondingly increased, provided that reflex stimulation associated with any particular procedure does not demand a deeper level of anesthesia. Thus it will be seen that the indications and uses of trichloroethylene are indeed legion, and when wisely used, an agent is available in it which has much to commend it. Administered with nitrous oxide, the record of safety of the drug over the past decade in Great Britain is most impressive indeed and warrants our close attention.

CONCLUSIONS

Trichloroethylene is relatively new to the United States, but it is an anesthetic agent of great possibilities. In its favor are the following facts:

1. Marked analgesic properties;
2. Non-flammability;
3. Rapid induction and recovery;
4. No increase in bleeding;
5. No increase in salivary flow;
6. No viscerotoxic properties in the doses recommended;
7. Rarity of post-operative nausea and vomiting;
8. Portability of analgesic equipment;
9. Ease of management of analgesia;
10. Cheapness of the drug.

The following are the principal disadvantages and limitations of trichloroethylene:

1. A high boiling point rendering the open drop administration difficult;
2. Inadequate muscular relaxation within the range of safety;
3. Decomposition in the presence of soda lime precluding the closed circuit technique;
4. Occasional occurrence of tachypnea and tachycardia;
5. Incompatibility with epinephrine;
6. Potency and potential visceral toxicity in excessive doses.

Fortunately none of these disadvantages are of a serious nature and none interfere with the inherent safety of trichloroethylene for analgesia and light anesthesia, and as a supplemental agent for other drugs. Recognizing these definite limi-

tations of trichloroethylene, the agent becomes one of the most useful additions to anesthesia for many years past. Its record of safety in the experience of British anesthetists is truly unequalled by any other agent, and we may do well to profit by the experience gained by our colleagues in the British Isles. Trichloroethylene has much to recommend it to the attention of general practitioners and dentists for the procedures outlined in this paper.

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ACTH and Cortone in Eye Diseases

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The local *use* of cortone in eye diseases was first reported at the meeting of the American Ophthalmological Society in June 1950. Dr. Alan Woods reported that cortisone solution, instilled locally into the eye, had been strikingly beneficial in checking inflammation in eight cases of anterior segment and conjunctival disease. In addition, experimental proof was given that this type of treatment effectively blocked inflammation in the eye due to protein agents, bacterial antigens, and tuberculin as well as that caused by injecting glycerine and jequirity into the anterior chamber. The inflammation was blocked very effectively, altho the effect was temporary. The importance of these facts is obvious. Only a small amount of the *drug* need be used, so the cost to the patient is low and hospitalization is not required. Moreover, the normal secretion of cortone by the adrenals is neither suppressed, as it is when cortone is *given* internally, nor increased as it is with ACTH, hence there are no undesirable side effects.

A few months after Dr. Woods' report both cortone and ACTH became available to everyone. We are now well on our way to finding out what place these products are to have in the treatment of eye diseases as well as what difficulties may arise from their use. They are potent, and when administered internally in too large a dose and for too long a time, can cause considerable harm. A complete discussion of this subject belongs in the field of internal medicine, but the ophthalmologist must have a practical working knowledge of it, or he should not undertake treatment without help from an internist. There have been

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a few changes in the method of administration and dosage since the *drugs* first became *available.*

Cortone for local *use* may be *employed* full strength or diluted with normal saline, (one part cortone to two parts saline, or, as is usually done because it is well tolerated, one to four). Cortone for local *use* is available also as an ointment and may well be applied just before retiring to produce continued action during sleeping hours. The label on the bottle of the solution should be marked "shake" and it is important that the patient be instructed to do so. In severe cases the solution should be *used* every hour until improvement is obtained, then reduced to every two hours. Cortone locally may be continued as long as desired; and in vernal conjunctivitis and sympathetic ophthalmia it often is *used* for months.

Subconjunctival injection of a few drops of full strength cortone acetate solution is permissible if increased *effect* is desired, as in cases of interstitial keratitis, sclerosing keratitis, and posterior uveitis. It can be repeated when the amount previously injected is absorbed, which varies from three to ten days. No serious systemic reactions have been observed from subconjunctival injection.

ACTH is usually given intramuscularly every six hours, starting with 10 U.S.P. units every six hours for several days. If no clinical *effect* is noted, the dose may be increased to 20, or even 30 units, but it should be reduced to 10 units as soon as *possible.* In general, infants and young children require a larger dose per kilo of body weight than do adults. If high doses are needed or if edema develops a low sodium diet with increased potassium intake is advisable. In general the side *effects* are reversible, but caution is essential in giving ACTH or cortone to patients with hypertension, congestive heart disease, or diabetes, or in the *possible* presence of any acute suppurative disease of the gall bladder or appendix. Peritonitis may develop without our knowing it. The eosinophil count should be made every few days to keep track of the degree to which these cells are decreased. When the eye has recovered the dose of ACTH is reduced gradually rather than stopped abruptly.

Cortone may be given intramuscularly or by mouth. Formerly the suggested dose was 300 mg. the first day, 200 mg. the second day, and then 100 mg. daily. This probably was more than necessary. Now the usual dose is 100 mg. daily, 25 mg. every six hours. It is important to remember that when cortone is *given,* the adrenals largely cease to produce cortone. Therefore, the dosage should be reduced gradually and it may be well to *give* a little ACTH when cortone is discontinued. The same care must be exercised with cortone as with ACTH. Cortone or ACTH probably can be *used* for ten days without ill *effects.* This is often all that eye cases need.

It is important also to evaluate both the good and bad *effects* of these *drugs* upon the eye itself Inflammation of the eye as of other organs, begins with congestion, edema, swelling, transudation of fluids, and influx of lymphocytes or leucocytes. These changes help to dilute and destroy the causative agent. If the disease is severe, necrosis may occur. With healing, edema and congestion disappears and leucocytes migrate away; but some fibrosis and scarring may take place. In many eye diseases, loss of vision is *caused* by adhesions and membranes resulting from fibroplastic reaction such as corneal scarring, posterior synechia, or cyclitic membrane. To a *considerable* extent active inflammation is beneficial in overcoming infection but harm follows if the fibroplastic healing stage is overdone. When the disease is caused by bacteria, the inflammatory reaction is blocked by ACTH and Cortone, the organisms may have a better chance to develop than if no treatment were used. However, in the later stage of inflammation, the hormones may reduce fibroplastic formation enough to be of value. This concept may explain why the hormones are at their best in allergic conditions and in inflammations not *produced* by pyogenic organisms. It also indicates that in suppurations, antibiotics may be *used* along with the hormones. The concept of cortone and ACTH inhibiting fibroblast formation is controversial but the degree to which such inhibition occurs probably is not great. There are other instances of the harmful *effect* of cortone on the eye. Ormsby, Dempster, and Van Rooyen found that in experimental herpetic keratitis, moderate doses of cortone did no good and larger doses were harmful.

During the past two years the authors have treated, approximately 175 patients with these drugs, the great majority receiving cortone drops

locally. The *results,* which coincide with those of other observers, are as follows:

1—Diseases of the Eyelid. Atropin dermatitis *responded* well to local cortisone. No benefit in contact dermatitis or chalazion.

2—Disease of the Conjunctiva. *Excellent response* to local cortone in allergic conjunctivitis (drugs, cosmetics, etc.), phlyctenular keratitis, vernal conjunctivitis, burns of the conjunctiva, and in staphylococcal and pneumococcal conjunctivitis.

3—Diseases of the Sclera. Episcleritis *responded* extremely well to local cortone; all recovered in a few days. A few *cases* of deep scleritis and sclerosing keratitis *responded* well, but more slowly.

4—Diseases of the Cornea. The *results* in corneal disease were difficult to evaluate. *Results* with local cortone were good in phlyctenular keratitis, epidemic kerato-conjunctivitis, recurrent erosion of the cornea, and in marginal catarrhal ulcers. In dendritic ulcer the *results* in some *cases* were extremely good, but in a few, the opposite was true; in one, a secondary infection occurred which caused hypopyon and almost perforated the cornea. In suppurative keratitis, local cortone makes the eye more comfortable in the early stage but probably is harmful later. However, it is of *considerable* value after the healing stage is well started. There is much variation in the reports in the literature on the *effect* of cortone on corneal diseases. Some observers report *excellent results,* others are opposed to its *use.* The problem is far from settled. Interstitial keratitis *responded* well when subconjunctival injections of cortone were combined with large doses of penicillin. Old corneal scars and corneal dystrophies were not helped.

5—Diseases of the Uvea. Non-granulomatous iritis *responded extremely* well to local cortone in all instances. In a few *cases* in which rheumatoid arthritis was present, the patients also received cortone internally. A few recurrences were observed, but continued treatment was effective. One case of tuberculous nodular iritis did not *respond* until PAS and streptomycin were *given* concurrently. Disease of the posterior uvea were treated by ACTH or cortone internally. The *results* were *excellent* in acute choroiditis. Some improvement was obtained in a few cases of senile disciform macular degeneration. There was no benefit in retinitis proliferans. The *results* in sympathetic ophthalmia are better by far than with any other form of treatment, but some *cases* remain difficult. It is *possible* now to operate on sympathetic ophthalmia without getting the severe post-operative reaction formerly dreaded. We recently had an unusually severe *case* in which iris bombe, glaucoma, and cataract occurred as complications. Three iris transfixations, one iridectomy, and a lens extraction were done. ACTH was necessary for almost a year, so that Cushing's syndrome *occurred,* but the child can see.

6—Diseases of the Lens. No *effect* has been observed on the *cataract* when eyes with *cataracts* were being treated for co-existing disease. No attempt has been made to treat *cataracts* alone.

7—Glaucoma. Primary glaucoma has not responded to local cortone. In secondary glaucoma, due to uveitis, *response* has been good to both local and systemic cortone. In the glaucoma phase of retrolental fibroplasia, local cortone is helpful in making the eyes more comfortable. In glaucoma secondary to thrombosis of the central vein, local cortone is of great value in making the eye comfortable, but has no *effect* on tension or on new vessel formation in the iris.

8—Retrolental Fibroplasia. We have *used* both local cortone and ACTH internally in many of these *cases.* In two, the retrolental membrane became smaller when ACTH was *used.* In most patients no influence was observed.

9—Diseases of the Retina. As a rule no effect is obtained with ACTH in retinitis pigmentosa, but a few *cases* have been reported in which there was real benefit. We have had one *case* in which the child had to be taken out of a sight-saving class and put in a braille class. After treatment with ACTH his vision improved in the right eye from 15/200 to 20/100 and in the left from 2/200 to 10/200. He was transferred back to the sight-saving class and is doing well. In this case improved vision was not observed until several weeks after treatment was given. This is often what happens when diseases of the posterior segment are treated.

10—Intraocular Surgery. Much help can be obtained from cortone and ACTH after intraocular surgery. It is especially valuable after trephine and iris inclusion operations to reduce the low grade iritis that often occurs and to

prevent scar tissue from closing the trephine opening. After cataract extraction, cortone drops should be used *after* the fourth or fifth day if the eye is unusually congested. When cataract must be removed from an eye which has had iritis or if the patient has rheumatoid arthritis or in children with Still's disease who have polyarthritis, iritis, and secondary cataract, it is wise to start ACTH before operating, continue it after the operation, and it is perfectly feasible to start local cortone drops 24-48 hours after operating. With multiple sutures closing the incision, the risk of opening the eye every hour is less than the risk of severe iritis which usually ensues if these hormones are not used. We have not found that wound healing is delayed in any important degree when sutures are used.

SUMMARY AND CONCLUSIONS

Cortisone locally is extremely effective in blocking inflammation of the anterior half of the eye. For inflammations of the posterior segment, cortone or ACTH internally should be used. Further study is needed to evaluate the effect in corneal diseases and in retinitis pigmentosa.

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Eye Changes Due to Advanced Age

Peter C. Kronfeld, M.D.
Chicago

The wording of the respective assignments in this symposium may create the impression that the ophthalmologist spends a good part of his professional life in the upper stories of an ivory tower classifying, cataloguing and correlating ocular changes, while the surgeon and the internist grapple with the real problems of acute catastrophic disease. To correct this impression the following discussion will center around those ocular changes due to advanced age which give rise to ophthalmological problems. Functionally insignificant tissue changes will be mentioned only for the purpose of greater contrast between disabling and non-disabling tissue changes.

An excellent example of the latter is the widespread atrophy of fatty, fibrous and elastic tissue in all the adnexa of the eyeball that make up the characteristic physiognomy of the elderly. From its origin in the region of the eyebrow, the upper lid recedes deeply into the orbit and then comes forward to rest on the eyeball and to cover a larger than normal portion of the cornea. The lower lid loses a good part of its support and elasticity and becomes overly relaxed and flaccid. The normal pump action of the musculature surrounding the tear passages is impaired. The stagnant tears overfill the conjunctival sac even though the senile lacrimal gland produces less than the normal amount of fluid. But no serious disturbance of the lid functions results from this senile atrophic process. Nor does any disturbance of function arise from a change characteristic of the oldest age group, the so-called hyaline plaques in the sclera.

The principal ophthalmologic problem due to advanced age is diminution or distortion of vision. The two main factors in this diminution are senile cataract and senile degenerative diseases of the central portion of the retina. Cataract in the usual sense denotes a state of abnormal turbidity or opacity of parts of the lens. Omitting congenital opacities and acquired ones due to definite, well-established etiologies, opacities of the lens occur with a characteristic age

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incidence which rises from zero at birth to 100% at the age of 80. The rate of increase in frequency is slow up to the age of 40 and more rapid from thereon. While heredity and environment probably play a part in the development of these lens opacities, age is obviously the strongest, the predominant factor. A good many of these opacities cause no or minimal subjective symptoms so that the ophthalmologist who happens to see them during a routine check-up, is often in a quandary whether or not to mention their presence to the patient. Lens opacities of this general type, but of a magnitude sufficient to make the patient conscious of a diminution of vision constitute senile cataract in the clinical sense. The incidence of senile cataract in the clinical sense is not accurately known but probably starts from 0% at the age of 40, rises at first slowly and then more rapidly to reach a frequency of about 50% at the age of 80.

The morphology as well as the clinical course of senile cataract is fairly characteristic. The distribution and the mode of progression of the lens opacities follow well-established patterns which distinguish senile cataract from most of the cataracts due to other causes. Senile cataract is a characteristic senile change in most domestic animals.

The conditions under which the cataract develops seem simple and amenable to the investigative approach. The lens can be removed surgically and the fluid surrounding it can be aspirated with only a slight and temporary disturbance in the function of the surrounding tissues. It seems like an ideal set-up for the study of the aging process. In the words of one of the very active workers in this field "the analysis of this subject is still in the observe and record stage . . . . the fundamental processes which cause these changes are still a matter of speculation . . . ." (Harris, J. E. Lectures in biochemistry of the eye, the Lancaster Course, Portland, Maine, 1951.)

Like the senile changes of the skin, the cataract is a rather conspicuous manifestation of age. Clinical examination of the affected eye, before and after cataract surgery, reveals signs of senile involution in other ocular structures. Thus, senile cataract probably represents the most easily noticeable manifestation of a rather widespread involutional process due to age.

What are the problems arising out of the development of senile cataracts? While the visual disturbance varies greatly as to the type and severity, two characteristic visual difficulties are most commonly mentioned in the patient's complaints. Depending upon the location of the opacities within the lens the visual impairment is more pronounced under conditions of indoor near vision or of outdoor distance vision. In the former situation the patient finds it difficult to recognize fine detail such as newsprint or small figures under lighting conditions over which he has control. Outdoors the patient is particularly bothered by lights "shining right into his eyes". At the same time the details of the outside world, that is bus numbers, street signs and peoples' faces appear blurred and distorted. The degree of blurriness and distortion varies depending upon the position of the light sources in relation to the patient. Such a visual disturbance is apt to give the patient the feeling of insecurity and unfitness for outdoor life although the same patient in the eyedoctor's office with the light well concentrated on the Snellen chart may still read 20/20 or 20/30. The patient with early senile cataract is usually happier in his home where he can regulate the direction in which the light enters his eyes so as to imitate the conditions during his vision test in the eyedoctor's office. The progressiveness as well as the variability of all these disquieting symptoms is an aggravating factor.

On the basis of my own experience I regret to state that I know of no effective non-surgical treatment for the progressive forms of senile cataract. The temporary improvements that may occur during periods of non-surgical treatment can be matched by similar improvements occurring while the patient is receiving no treatment of any kind.

The advanced age of the cataract patient does not constitute a problem in the surgical treatment of the condition. I am not aware of the existence of any data indicating that the results of cataract operations are in any respect poorer in patients of the age of 85 than in patients of the age of 65. While it is true that we are still not entirely satisfied with the present techniques of cataract extractions and are constantly working on refinements of these techniques the fact remains that with very different techniques and in the hands of very different surgeons the task

prevent scar tissue from closing the trephine opening. After cataract extraction, cortone drops should be used *after* the fourth or fifth day if the eye is unusually congested. When cataract must be removed from an eye which has had iritis or if the patient has rheumatoid arthritis or in children with Still's disease who have polyarthritis, iritis, and secondary cataract, it is wise to start ACTH before operating, continue it after the operation, and it is perfectly feasible to start local cortone drops 24-48 hours after operating. With multiple sutures closing the incision, the risk of opening the eye every hour is less than the risk of severe iritis which usually ensues if these hormones are not used. We have not found that wound healing is delayed in any important degree when sutures are used.

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incidence which rises from zero at birth to 100% at the age of 80. The rate of increase in frequency is slow up to the age of 40 and more rapid from thereon. While heredity and environment probably play a part in the development of these lens opacities, age is obviously the strongest, the predominant factor. A good many of these opacities cause no or minimal subjective symptoms so that the ophthalmologist who happens to see them during a routine check-up, is often in a quandary whether or not to mention their presence to the patient. Lens opacities of this general type, but of a magnitude sufficient to make the patient conscious of a diminution of vision constitute senile cataract in the clinical sense. The incidence of senile cataract in the clinical sense is not accurately known but probably starts from 0% at the age of 40, rises at first slowly and then more rapidly to reach a frequency of about 50% at the age of 80.

The morphology as well as the clinical course of senile cataract is fairly characteristic. The distribution and the mode of progression of the lens opacities follow well-established patterns which distinguish senile cataract from most of the cataracts due to other causes. Senile cataract is a characteristic senile change in most domestic animals.

The conditions under which the cataract develops seem simple and amenable to the investigative approach. The lens can be removed surgically and the fluid surrounding it can be aspirated with only a slight and temporary disturbance in the function of the surrounding tissues. It seems like an ideal set-up for the study of the aging process. In the words of one of the very active workers in this field "the analysis of this subject is still in the observe and record stage . . . . the fundamental processes which cause these changes are still a matter of speculation . . . ." (Harris, J. E. Lectures in biochemistry of the eye, the Lancaster Course, Portland, Maine, 1951.)

Like the senile changes of the skin, the cataract is a rather conspicuous manifestation of age. Clinical examination of the affected eye, before and after cataract surgery, reveals signs of senile involution in other ocular structures. Thus, senile cataract probably represents the most easily noticeable manifestation of a rather widespread involutional process due to age.

What are the problems arising out of the development of senile cataracts? While the visual disturbance varies greatly as to the type and severity, two characteristic visual difficulties are most commonly mentioned in the patient's complaints. Depending upon the location of the opacities within the lens the visual impairment is more pronounced under conditions of indoor near vision or of outdoor distance vision. In the former situation the patient finds it difficult to recognize fine detail such as newsprint or small figures under lighting conditions over which he has control. Outdoors the patient is particularly bothered by lights "shining right into his eyes". At the same time the details of the outside world, that is bus numbers, street signs and peoples' faces appear blurred and distorted. The degree of blurriness and distortion varies depending upon the position of the light sources in relation to the patient. Such a visual disturbance is apt to give the patient the feeling of insecurity and unfitness for outdoor life although the same patient in the eyedoctor's office with the light well concentrated on the Snellen chart may still read 20/20 or 20/30. The patient with early senile cataract is usually happier in his home where he can regulate the direction in which the light enters his eyes so as to imitate the conditions during his vision test in the eyedoctor's office. The progressiveness as well as the variability of all these disquieting symptoms is an aggravating factor.

On the basis of my own experience I regret to state that I know of no effective non-surgical treatment for the progressive forms of senile cataract. The temporary improvements that may occur during periods of non-surgical treatment can be matched by similar improvements occurring while the patient is receiving no treatment of any kind.

The advanced age of the cataract patient does not constitute a problem in the surgical treatment of the condition. I am not aware of the existence of any data indicating that the results of cataract operations are in any respect poorer in patients of the age of 85 than in patients of the age of 65. While it is true that we are still not entirely satisfied with the present techniques of cataract extractions and are constantly working on refinements of these techniques the fact remains that with very different techniques and in the hands of very different surgeons the task

of removing a cataract and of restoring free channels for the passage of light through the eye is accomplished in close to 90% of all operations undertaken. Cataract incisions while located, for the most part, in an avascular tissues, heal as a rule just as well in individuals at the age of 85 as they do in individuals of 60. Ocular or systemic complications arising in patients of advanced age either during surgery or during the postoperative period have become rare, especially since the introduction of corneoscleral sutures, of prophylactic treatment with antibiotics and of ambulatory treatment from the second or third postoperative day on. Due to the steady increase in life span of the population of the United States the number of cataract operations performed per annum seems to be on the increase although, through negligence of mine, I am not able to back this up with any statistical figures today. It is certain however that the manufacture and sale of cataract lenses has been on the increase.

This brings me to one of the major problems in connection with senile cataract, the dependence of the operated patient upon lenses which very profoundly disturb the patient's rapport with the outside world. The fundamental factor in this disturbance is the enlargement of the retinal images by the cataract lenses. A patient who during 60 years of his life has learned and become used to a certain relationship between the size of retinal images and the other sources of information concerning the outside world, suddenly finds himself in a state where tactile and visual impressions no longer jibe. Objects appear very much closer than they actually are, seriously upsetting a judgment of distance acquired and found reliable throughout 50 to 60 years of pre-cataract life. The following is a quotation from an editorial "The adjustment to aphakia" (Am. J. of Ophth. 35:118,1952.) written by an ophthalmologist who had undergone successful cataract extractions on both of his eyes and had made as complete an adjustment as possible: "An unpleasant phenomenon encountered by the new aphakic is spherical aberration. At first it appears almost impossible to live in a world in which all straight lines are transformed into curves and a linear and upright world is suddenly converted into one of parabolas. This difficulty is augmented when he discovers that the movements of his eyes, which were part of his former existence, suddenly cause the curved outside world to squirm like writhing snakes. Thus the newly elected aphakic regards a door through which for years he has been accustomed to pass without misadventure and, to his amazement, he finds the jambs on each side curve in toward the middle and leave an aperture only a few inches wide at the center, through which all reason tells him it will be impossible to wedge his portly person.

When mature thought finally persuades him that this is an optical illusion and he timidly advances to make the test, he finds to his delight that as he approaches the opening, the curves recede gracefully and invitingly to his approach and he finds easy and unimpeded passage.

Similarly, when entering a high room with tall columns such as hotel lobby or a railroad station, he finds the supporting columns bending and waving precariously and he is immediately convinced that by trespassing in such a manifestly shaky edifice, he will accentuate the instability and invite disaster. He fears that he will emulate Samson at Gaza, where in revenge for the loss of his own eyes, Samson precipitated the entire structure on the heads of jesting Philistines, and incidentally upon his own!

Gradually he learns the secret of persuading the outside world to remain in a properly upright position and abandon its sinuous behavior. The secret consists in holding his eyes motionless, his gaze fixed through the optical center of the correcting lens, and to move his head slowly to look at any desired object not in his direct view. When this simple trick is mastered, the spherical aberration disappears, and, once gone, can only be elicited and reproduced with difficulty."

A good many of the problems posed by the development of senile cataract can be solved to the patient's satisfaction. There are a good many cases in which the problem is solved by settling for a somewhat imperfect vision through a mild, fairly stationary cataract. The physician's part is to help the patient size up his professional and psychological handicap and his unhappiness resulting therefrom and to weigh this handicap carefully against the disadvantages of aphakic life. The ophthalmologist's part consists of estimating the future course of the lens opacities, stationary, slowly progressive or rap-

idly progressive.

A much more serious problem is posed by the senile atrophic and degenerative changes affecting the central portion of the retina. Strictly speaking they have to be classified as diseases of the aged since they are the consequence of local arteriosclerosis. Its mildest form, senile macular degeneration, is a common cause of failure of central vision in the old people of the U. S. A. The condition usually starts unilaterally but the other eye almost invariably becomes affected within a period of a year. Primary changes are found in the choroidal circulation which show marked sclerotic changes and degeneration.

It is a situation in which a common and widespread vascular disease of old age causes the most conspicuous and disabling manifestations, in the realm of vision. Most of the individuals appear to be in good health and their principal trouble is the impairment or complete loss of central vision. The incidence of this disease in the population of the middle west is not definitely known. About one-third of the elderly applying for blind assistance in the State of Illinois have suffered a reduction of vision below the level of 20/200 as a result of senile macular degeneration. One redeeming feature of the disease which the physician should stress in counselling the patient, is that it does not lead to blindness, the patient retaining a normal field of vision except for a central scotoma of varying size.

The treatment of senile macular degeneration is extremely unsatisfactory because of the unusually high circulatory requirements of the retina and because of the truly sclerotic and progressive nature of the underlying choroidal disease. Vasodilators rarely ever produce lasting improvements. ACTH or Cortisone administered during edematous phases of the disease may bring about temporary improvement without changing the outcome. It is my feeling therefore that these drugs are not indicated.

In the very early stages of the disease when the vision is still 20/40 or better microwave diathermy has been found of value by W. B. Clark (Transactions Am. Acad. of Ophth. & Otolar. 56:600, July-August 1952). That is about the only ray of hope that I can see now. In most cases, however, the treatment is limited to trying to conduct the patient's life into channels where his loss of central vision is less acutely felt and where satisfaction can be derived from work not requiring central vision. As stated so very aptly by Duke-Elder many of these patients "can be helped only insofar as every effort should be made to assist them and accommodate their interests with philosophy and resignation to their limited visual efficiency. "The inability to read may call for a talking-book machine or the help of a reader. The patient's normal range of vision should permit him to move around on foot almost as freely and safely as a normal sighted person.

The term presbyopia would lead one to expect that it is a change due to advanced age. The underlying process is the hardening of the central, that is the oldest portion of the crystalline lens which gradually increases the load against which the muscle of accommodation has to work. The process starts as birth and continues from there at a very steady rate. The clinical manifestations, limitations of near vision, do not set in until the hardening of the lens has reached a certain magnitude which usually happens at the age of 40. The name presbyopia and the implication that it is a sign of advancing age, makes some people reluctant to accept presbyopia and the help afforded by glasses. Such people, are "bothered and annoyed by their glasses" because of their unwillingness to accept any or all signs of advancing years. In general, however, presbyopia presents no ophthalmological problem.

Practical Details in the Removal of Foreign Bodies from the Eye

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Many foreign bodies entering the eye may be removed without difficulty. Nevertheless certain problems exist in each case which help or hinder the surgeon during their removal. In the last ten years I have had the opportunity of removing many intra-ocular foreign bodies and from this experience I shall present some data which I hope may be of some help to all.

Foreign Bodies Deeply Situated In The Cornea:—Small deeply embedded foreign bodies in the inner third of the cornea and too small to be removed under the naked eye or loupe are removed under direct observation with the slit-lamp. The foreign body is loosened from its bed with the fine point of a Ziegler Needle Knife and then gently teased out or pulled out by the magnet. The exuding of tissue fluids may obscure the foreign body, and then it has to be removed on repeated attempts. Or, during the process, a perforation of the cornea, and a collapse of the anterior chamber may take place. Such a foreign body should be then removed after the anterior chamber has reformed, and not immediately.

Foreign Bodies In The Anterior Chamber:—The removal of foreign bodies lying loosely in the anterior chamber, always appears to be easier than is the case. One realizes this to be a fact, when he is in the midst of the attempted removal. Therefore, it is best to map out the procedure before starting, remembering, that it is essential to allow for plenty of working space. The anterior chamber is usually formed, because the opening made by the small foreign body in its passage through the cornea, is sealed over rapidly. It is best to make a large incision at the periphery of the cornea nearest the foreign body. Sometimes this incision can be as long as that made for a cataract extraction.

When the anterior chamber is shallow, one is compelled to make an ab-externo or scratch incision, and then to enlarge the opening with the corneal scissors. Sometimes, immediately after the initial trauma, the pupil responds poorly to atropine or esserine, and, the size of the pupil cannot be controlled. Then, in attempts at removal with the magnet, it is possible to displace the foreign body by pulling it through the pupil and under the iris or, into the chamber angle. The procedure may become very difficult, because the foreign body may become locked in the deepest recesses of the angle or somewhere under the iris. If the operator works slowly and carefully, it is not necessary to remove a sector of iris, with the removal of the foreign body.

Foreign Bodies Situated In The Lens:—The opening in the lens closes over rapidly and localized changes take place that might remain stationary or progress to a complete cataract. If the foreign body is small, and located at the periphery of the lens, and does not interfere with vision, it may be left alone. However, if it is located near the center of the lens, and interferes with vision, then, it is best to consider the removal of the foreign body and the lens after the inflammatory reaction which exists, subsides.

If the foreign body is large, and located within the lens, one may defer its removal until the lens becomes opaque — after which time the foreign body can be removed at the same time as the cataract. The swelling of the lens which may follow, may cause the development of a secondary glaucoma. The lens in such cases should be removed before the secondary glaucoma becomes severe.

Foreign Bodies Located In The Anterior Segment Of The Vitreous:—The size of the foreign body is usually small and it may possess some degree of magnetism. In such instances, the sclera and ciliary body is incised with the point of a thin sharp cataract knife by making

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short clean incisions at the site where the foreign body is to be removed by the magnet. There is little bleeding and the resulting wound heals without much reaction. If the foreign body is not too small, and can be easily obtained, it is best to make the incision through the pars plana of the ciliary body.

Foreign Bodies Of Borderline Location:—Many times it is impossible to determine the exact location of the foreign body after repeated reliable localizations are attempted by different roentgenologists. One cannot decide whether the foreign body is inside or outside of the eyeball. This indecision results from the fact that, eyes vary in size, and this variability in size causes an error of about 2mm. either way from the sclera. When such a situation exists, the region of the eyeball in the area which is involved, should be explored by direct inspection for any telltale contusions or perforations, and for the foreign body itself. (The Berman Locator is of great help in this situation since it helps reassure the operator that the foreign body is located in the area explored.) If no foreign body is found, one makes an opening in the sclera at the point closest to where the foreign body is supposed to be, and then, attempts its removal with the magnet. When the foreign body is located in the anterior two-thirds of the vitreous, its removal is usually easy because it is possible to get a good exposure and an exploration of the area is not difficult.

Foreign Bodies Situated In The Posterior Third Of The Vitreous:—These foreign bodies are always difficult to remove, — because of their location, because of their small size, and because it is difficult to get adequate exposure to permit proper manipulation of the magnet. Therefore, I do not hesitate to incise the conjunctiva freely and disconnect one or more muscles so that the tip of the magnet can be applied at the point closest to the foreign body. Of all the problems encountered, this situation is the most difficult, and yet, it is so essential to get the magnet as close to the foreign body as possible.

The Technique For Removal will now be explained in detail:—A Van-Lint Akinesia and a retrobulbar injection of novocaine is given. I incise the conjunctiva freely, then detach the muscle or muscles from their insertions and expose the sclera widely. The practice of pulling muscles aside with a hook is not satisfactory and is to be condemned. Make an adequate meridional incision at least 5mm long through the sclera and retina. By working on a soft eyeball and by gently pressing the tip of the magnet at the opening, separates the sclera and makes a free path for the exit of the foreign body without losing vitreous. I do not insert the tip of the magnet into the vitreous, since this procedure is unnecessary. My experience has been that with an exact localization and a good working magnet if the foreign body does not appear with the magnet placed outside of the eyeball, it will be rarely obtained by inserting the tip of the magnet into the vitreous. It is desirable to make a clean incision through the sclera and retina to prevent the tearing of the tissues by the foreign body as it is drawn toward the magnet. It is not necessary to suture the sclera since it comes together neatly and heals rapidly. Diathermy or chemical cautery of the surrounding area are superfluous procedures.

Localization Methods:—Because of the various types of steel and steel alloys made today, a foreign body may vary in its magnetic quality. It may possess a high degree of magnetism, or, a low degree, and then it might not be magnetic at all. Because of this fact an exact localization of the foreign body to determine the precise spot on the eyeball through which to remove it is essential since an error of a couple of millimeters will determine the success or failure of the removal.

The Berman Locator:—What is the Berman Locator? Briexfly, the Berman Locator is a portable electro-magnetic device designed to help locate small magnetic particles situated inside an eyeball. The most important part of the locator is the probe. The technique for locating a small magnetic foreign body is simple. A good exposure of the eyeball is necessary. The tip of the sensitive probe is then passed slowly over the eyeball. The point on the surface where the needle reaches the highest reading on the scale indicates the spot closest to the location of the foreign body. However, one may have some difficulty with its use when a low magnetic foreign body is located deep in the vitreous or, when the foreign body is located in the posterior segment of the eyeball. This occurs because it is difficult to get adequate exposure of the posterior

part of the eye and this lack of exposure prevents thorough manipulation of the tip of the probe with the resulting readings becoming indefinite and confusing. When used well the Berman Locator can be almost self-sufficient in locating a magnetic foreign body within the eyeball especially when the foreign body is near the sclera or when it is in the most accessible parts of the eye.

The Sweet Method Of X-ray Localization:—Films are made of the eye containing the foreign body in accurate relationship to two fixed objects 10mm. from the cornea. The two fixed objects consist of a tiny ball and cone, each supported on a rod. The patient fixes his eyes on a distant object and a true lateral x-ray is taken. Leaving the ball and cone in position, the x-ray tube is shifted toward the patient's feet so that the image of the ball and cone are more widely separated and a second exposure is made. The localization is then figured out by the projection of the measurements and lines on a chart. This method is the most accurate and when a good technique has been once developed, it is almost infallible.

Foreign Bodies—Their Nature and Size:—The density of the shadow of the foreign body seen on an x-ray film is no criterion of its degree of magnetism or of its ease of removal. A tiny foreign body one-half by one-half millimeter in size will appear to be pin-point on the x-ray film. A steel foreign body this size located within an eyeball is best left alone because it is too small to damage the eye and because of the smallness of its size it may not be attracted by the magnet.

A magnetic foreign body larger than one-half by one-half millimeter in size should be removed since it is large enough to be grasped by the magnet and its presence inside the eyeball can do some damage by the chemical changes occurring between the steel and the intra-ocular fluids.

Non-magnetic foreign bodies such as brass, copper, glass, and so forth, located in the vitreous cannot be removed by the magnet. Fortunately their occurrence is extremely low in my experience, certainly less than one-half of one percent.

The Nature and the Use of the Magnet:—The strength of pull of the magnet is due to the number of the lines of force created. The number of the lines of force are directly proportional to the number of the turns or windings of the coil and the thickness of the core.

The Lancaster or the Sweet Magnet are the most practical and the only ones that are needed. The giant magnet is never used in our practice. The Olive or stubby tip is the most desirable when removing a foreign body from the vitreous. When recovering a visible foreign body from the anterior chamber, the thin tip is the most practical. The anterior chamber is the only place in an eye where the magnet can be inserted without doing harm.

Great caution should be exercised in manipulating the magnet because carelessness would cause dislodgment of the foreign body. Be sure that the electric current used is a direct current. The magnet will not function when attached to an alternating current. It is important to place the magnet in position so that the tip is at the mouth of the opening into the eyeball before turning on the current. By applying gentle pressure on the sclera the lips are kept apart and an easy exit is made for the foreign body. Occasionally it is necessary to turn off the current at one second intervals to loosen the foreign body. At the same time the tip of the magnet is moved in a small arc in order to change slightly the position of the lines of force and to make the pull of the magnet more effective.

Embedded Foreign Bodies in the Ciliary Body:—Fortunately their occurences is very small — less than one half of one percent. The use of the Berman Locator is ideal in this situation.

The Use of Atropine and Eserine:—Avoid the promiscuous use of atropine or eserine especially in ointment form because they are both strong drugs and their action is prolonged. Do not use atropine when their is much hemorrhage or when a secondary glaucoma might develop. Eserine stimulates hemorrhage and may cause pain from the spasm of the ciliary body.

STATISTICS:—In a series of 82 consecutive cases of intra-ocular foreign bodies covering a period of two years,

19.5% the foreign body was in the vitreous and all of the vision was recovered;

21.9% developed traumatic cataracts;

7.3% the eyeball was damaged beyond repair and had to be enucleated;

7.2% developed a retinal detachment after

removal of the foreign body;

4.8% the foreign body was retro-bulbar with a total loss of vision;

7.3% developed either siderosis or chalacosis with a total loss of vision.

7.2% the foreign body was in the anterior chamber and was removed by making an incision through the periphery of the cornea. An iridectomy was not done in any of these cases;

19.4% the foreign body was located in the inner third of the cornea and was removed under the slit-lamp;

4.8% the foreign body was lodged in the interior of the lens and in each case the foreign body was removed at the same time as the cataract.

All Foreign Bodies Should Be Removed If Possible regardless of their composition if you can get at them without causing damage to the eyeball. I never accept the patient's assertion that the materials upon which he was working at the time of the accident were not magnetic. Usually, he is apt to be misleading. The only time that one can be certain that the foreign body is not removable, is after repeated attempts have been made with the magnet and no foreign body is obtained. My experience has proven to me that many foreign bodies are extracted when the use of the magnet is attempted that otherwise would have been left to remain inside an eye.

CONCLUSION:—The most important facts to be considered in the removal of a foreign body from inside an eyeball are:

1—an exact localization of the foreign body by x-ray or Berman Locator or both

2—a good adequate exposure and

3—attempt removal always with the magnet.

DISCUSSION

Dr. Rampona — The time is short and I am unable to give the statistics. I wish to thank Dr. Allen for his discussion of this paper and Dr. Guibor in giving helpful suggestions when this paper was in process of being written.

Dr. Thomas D. Allen, Chicago: I especially like Dr. Rampona's insistence on exact localization and adequate exposure. I like the fact that he speaks of more than one x-ray. I remember one patient who was brought in with a blind eye. You could not see inside of it because of a cataract. We knew that he had had a perforation of the cornea, a perforation of the iris, and a perforation of the lens. We thought there must be something back in that eye. We had an x-ray and there was nothing found. Then we had Dr. Porter x-ray him and he found a 1.5 mm. piece of steel in the optic nerve head. I think you ought to have more than one x-ray taken and by different men.

I would like to take exception to one or two things. I presume he might take exception to one or two things I might say. He said it was unnecessary to insert the tip of the magnet into the vitreous chamber. I cannot forget one patient who had a fairly large foreign body in the eye, a patient of Dr. Wilder. We removed it with a magnet after x-ray. Then for some reason or other Dr. Wilder said, "let us take another x-ray". I think he suspected something wrong. The size of the foreign body was not quite like the size of the one shown in the x-ray. We had another x-ray. The foreign body was there where it had been at first. He went in a second time and really went into the vitreous chamber. He went in with a very thin tip. You can use the Lancaster hand magnet, or the larger (giant) magnet. I do not think we have used the great big giant magnet in years in the office, though we still use it at the hospital.

He spoke about cauterization near the edges of the wound as we do when shortening an eyeball for detachment of the retina. I think this is a good thing. You can incise the retina if you want to, but certainly if the retina is damaged you ought to cauterize all around the area. It helps seal off the operated area, and sometimes prevents detachment of the retina in our estimation.

I believe Dr. Rampona said tiny magnetic foreign bodies in the eye need not be removed. I do remember that a foreign body, ½ x ½ mm. went in through the eyelid and through the sclera of a son of one of our professors at Rush College. The father was chopping wood. A little piece flew off, penetrating the eyelid. That was all the attention that was paid to it until six weeks later, when the boy began to have an iridocyclitis. Then we x-rayed him and found a very tiny foreign body, ½ x ½ mm. in the vitreous; but it was too late to save the eye.

To mention one other point about the anterior chamber, it is said that is the only part of the eye where the insertion of a magnetic tip can be done without damage. I think it is always dangerous to insert anything into the eye. I think one ought to be extremely careful. I remember one cataract case, in which we used a new knife I had brought from London. The knife penetrated the limbus, but Dr. Wilder could not make the counter puncture. On withdrawing the knife we found the end had broken off. It was imbedded in the opposite limbus, and it was one awful job to remove it, even with the magnet. Fortunately we did not get a post-operative complication.

The Physiology of Abdominal Pain

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A discussion of abdominal pain should begin with a few words concerning the physiological anatomy of pain conduction. The pain receptors in the gastrointestinal tract, as elsewhere, are undifferentiated nerve endings. They transmit impulses via the splanchic and pelvic nerves, without synapses in the sympathetic ganglia, to the dorsal root ganglia. They synapse in the dorsal gray matter, cross and ascend in the lateral spino-thalamic tract to the thalamus and the post-central gyrus of the cortex and the frontal cortex. The vagus nerve, of course, contains no pain fibers. Accordingly, pain can be interrupted by peripheral section, by section of the spino-thalamic tract, by topectomy and by lobotomy.

The most common stimulus of pain fibers is injury to tissue. It has been postulated by Sir Thomas Lewis that injury releases a neurohumoral agent, the P. substance, which has not been adequately identified. In fact, Dr. Sol Roy Rosenthal feels that the P substance is histamine. Unlike most nerve endings, pain fibers show little, if any, adaptation to repetitive discharge. The intensity of pain stimulus depends on the frequency of impulses and the number of pain fibers which are involved.

Several theories have been advanced to explain gastrointestinal pains. One group of investigators holds that the gastrointestinal tract does not contain pain fibers; that abdominal pain is always pain of the mesentery. I do not personally share this concept. It is my feeling that pain fibers, though sparse, are present in the gastrointestinal tract but that special stimuli are needed to fire them in an uninflamed bowel. Inflammation greatly increases the sensitivity of pain receptors; and, while only contraction and distention are known to produce pain in normal bowels, in the presence of inflammation many lesser stimuli will become painful.

One must distinguish five types of pain in visceral disease. The first type is true visceral pain which is referred to the site of pain stimulation itself.

The second type is referred pain which, though arising from an abnormality of the viscus, is referred to a somatic area. The somatic site of reference is supplied by the same spinal segment as the damaged viscus. The area of reference is deeper than the skin. While many theories have been proposed for its explanation, the final nature of its pathways has yet to be established. Some authors believe that visceral and somatic pain fibers converge in the second neuron; Head's law, on the other hand, suggests that the transformation of pain from visceral to somatic areas occurs in the cerebral cortex; and others believe in the existence of axone branching, which would connect axones of somatic directly with those of visceral areas.

The third type of gastrointestinal pain is non-referred somatic pain associated with visceral disease as in extension of a disease process to the perietal peritoneum. The fourth type is secondary referred visceral pain. An example

The opinions expressed in this paper are those of the author and do not necessarily represent the official views of any governmental agency.

of the fourth type is the pain in appendicitis, which is referred to the epigastrium secondarily as a result of the pylorospasm arising from the viscero-visceral reflex between appendix and pylorus.

The last, fifth, type of gastrointestinal pain is of particular importance from the clinician's point of view. It is the habit reference pain of patients who refer pain to areas which have become sensitized because of prolonged disease. Patients suffering from chronic gall bladder disease, for instance, might refer "coronary pain" to the right upper quadrant, a fairly common and often misleading clinical finding. As a whole, pain is always referred from deep to superficial structures, probably because of an increasing level of sensitivity to pain towards the surface. One might mention here that some references are bizarre and poorly understood as yet. We do not know, for instance, why patients experience pain in the jaw subsequent to myocardial infarction.

Pain which originates from visceral disease is often accompanied by pilomotor, vasomotor and somatic phenomena in the area of reference. Sweating may occur; Lewis' triple response may be accentuated; and spasm of skeletal muscle, accompanied by tenderness and hyperalgesia might develop. It might be worthwhile to enumerate briefly the sites of reference for abdominal pain. The eosophagus is inervated by the first to the seventh thoracic nerves; pain underlies the sternum, and the level of reference corresponds, in general, to the level of the pathological change.

The stomach is supplied by the seventh to the tenth thoracic nerves; pain is referred to the epigastrium usually just to the left of the mid-line. Pain from the duodenum (which is inervated by the ninth and tenth thoracic nerves) resembles referred gastric pain but tends to localize just to the right of the mid-line. Pain from the small intestine is felt in the periumbilical area, from the terminal ileum segment and appendix in the right lower quadrant. Pain from the colon might be referred to any part of the abdomen: changes in the fixed areas of the large bowel are usually felt in the overlying parts, while involvement of the free portion is referred in general to the hypogastrium, just suprapubically.

The pancreas is inervated by the seventh to the eleventh thoracic nerves, the biliary tract by the seventh to the ninth: the biliary tract, as a rule, shows a well defined lateralization of referred pain. The kidney, ureter (and, by the way, part of the colon) have unilateral inervation which facilitates the clinical identification of pain originating from these structures.

DISCUSSION

Dr. Gilbert Kipnis, Clinical Assistant in Medicine: You have discussed reference of pain to overlying areas and lateralization of pain. How do you explain the back pain in pancreatic disease?

Dr. Grossman: The exact mechanism of pain referred to the back is not known. It occurs not only in pancreatic involvement but also in other types of abdominal disease. I am tempted to say that it is more common in pancreatic involvement because of its retro-peritoneal location.

Dr. Angelo Creticos, Clinical Instructor in Medicine: Is it the pancreas or the pancreatic capsule which contains pain fibers?

Dr. Grossman: The pancreas proper, presumably. In recent studies, minute electrodes have been implanted in the pancreatic tissue and definite pain has been produced by electrical stimulation.

Dr. William Mandel, Instructor in Medicine: In this respect, the liver . . . (Dr. Samter, interrupting) and the lung, Dr. Mandel . . . differs, I believe, from the pancreas?

Dr. Grossman: Yes. This is correct. The pain fibers of the liver appear to be located in the capsule. Similarly, pneumonia is usually painless, while both bronchitis and pleurisy are painful because bronchi and pleura contain pain fibers, while the parenchymal tissue of the lung does not.

A Physician: Do you find that the spleen contains pain fibers?

Dr. Grossman: As you know, the spleen, as a rule is not sensitive to pain. If inflamed, however, it becomes painful: as a rule pain is referred to the overlying areas, but there can also be diaphragmatic reference on occasion. Pain from the central region of the diaphragm, by the way, is referred to the tip of the shoulder.

Dr. Louis Johnston, Research Assistant in Medicine: What is your explanation of the shoulder-hand syndrome?

Dr. Grossman: I believe that the shoulder-

hand syndrome results from viscero-somatic reflexes which eventually produces a dysfunction of the involved parts.

Dr. Melvin M. Chertack, Clinical Instructor in Medicine: It seems to be accepted that injection of local anesthetics into areas of referred pain is of little therapeutic value. Yet, if referred pain were caused by axone branching, local anesthetics should have at least some effect.

Dr. Grossman: I am not certain that this is correct: even if one would accept the concept of axone branching as an explanation of referred pain, you would still deal with both pain of central as well as peripheral origin. Clinically, one might state that local anesthetics will relieve areas of referred pain only if the pain has been complicated by local changes, for instance, spasm of peripheral muscles.

Dr. James Schoenberger, Assistant Professor of Medicine: What is your explanation of deep bone pain?

Dr. Grossman: Bone marrow has no pain fibers. Deep bone pain must be a deep somatic pain referred from the cortex of the bone.

Dr. Chertack: Would you care to comment on the nature of biliary dyskinesia?

Dr. Grossman: I believe that the term 'biliary dyskinesia' needs some clarification. If you mean pains which occur after removal of the gall bladder, they are usually due to a spasm of the sphincture of Oddi. If you feel, on the other hand, that biliary dyskinesia is a disease entity you will find disagreement among gastroenterologists as to the existence of such a syndrome.

Dr. Johnston: Are ulcer pains caused by hyperacidity or by pyloric contraction?

Dr. Grossman: Normal subjects can tolerate infusion of hydrochloric acid into the stomach without pain. In patients suffering from ulcers the acid undoubtedly acts as a chemical irritant to an inflamed area. Acid is the primary pain stimulus for ulcer pain. Motility may contribute in some cases as a pain stimulus.

Dr. Buford Hall, Senior Resident in Medicine: What is the mechanism of ischemic pain?

Dr. Grossman: Anoxia of active muscle tissue which produces chemical substances which excite pain endings. Pain from coronary ischemia is, of course, the foremost example of this particular type of pain.

Dr. Robert Kaiser, Clinical Assistant in Medicine: If histamine is the P substance, why do antihistamine drugs fail to control pain?

Dr. Grossman: I would guess that they lack the required specificity for this particular receptor.

Dr. Mandel: How does ACTH happen to control pain?

Dr. Grossman: ACTH, like aspirin, probably does not act on pain fibers but reduces pain by reducing the inflammatory process; neither increases pain threshold.

Dr. John Louis, Clinical Assistant in Medicine: Would you add one final word about the significance of the history of pain in the individual patient?

Dr. Grossman: I can sum up my answer in one sentence. I believe that a case history of pain in gastrointestinal disease is one of the most important, perhaps I should say the most important, diagnostic tool.

It's NOT Too Early

to plan for your Annual Meeting,

Chicago, May 19, 20, 21, 22

CASE REPORTS

Infectious Mononucleosis Complicated by Encephalitis With Permanent Damage to the Central Nervous System

Salvatore A. Motto, M.D.
Chicago

Within the last 15 years the protean nature of infectious mononucleosis has been emphasized repeatedly in the literature by observing authors [1,2,3,4,5,6,7,13,14,15,17]. The neurological signs and symptoms of this clinical entity occasion grave concern to the attending physician until the diagnosis is established. Then, because of the reported benign character of infectious mononucleosis, his anxiety lessens and he reassures the patient and family of the usual complete recovery from this disease.

Infectious mononucleosis with a complicating involvement of the central nervous system has been recorded by numerous authors [8,9,10,11,12,16,18,19,20,21,22] but little or no emphasis has been placed on the possibility of some residual pathology. Several reports, however, have sounded an ominous note in warning that this disease may leave its mark for a longer time than previously suspected. W. W. Dalton[17] mentions a young girl who, within six weeks of apparent recovery from the disease, presented signs and symptoms of myocardial insufficiency in a previously accepted normal heart. A. Bernstein[24] discusses a patient whose spleen descended 8 cm. below the costal margin during the acute illness; seven years later she still presented a palpably enlarged spleen. T. C. Bernstein and H. G. Wolff[19] in their review, cite three cases of complicating neuropathy in which the affected muscles apparently were accepted as permanently paralyzed and one case of encephalitis with permanent im-

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pairment of mental concentration and mild aphasia of the motor type.

The case report presented emphasizes the fact that infectious mononucleosis is not necessarily just a nuisance disease with only transient observable effects but is in reality a formidable disease that may produce alarming signs and symptoms and leave permanent damage. The case proved to be of interest to the staff of St. Mary of Nazareth Hospital in view of the history and physical findings presented to the several general practitioners, neurosurgical consultant, chief surgical consultant, and internist who examined her at different intervals over a three week period before the diagnosis of infectious mononucleosis was established. The laboratory data and subsequent course of the disease served to substantiate the diagnosis of infectious mononucleosis with a complicating encephalitis that left the patient with a lasting, elicited, horizontal nystagmus and right facial paralysis.

D. L., a 20 year old white female entered St. Mary of Nazareth Hospital, Chicago, because of fever, sore throat, numbness in the right side of the face a sensation of "pins and needles" in left hand and foot, and progressive lethargy. There was a three week history of "head cold" and mental depression and the patient had been seen by two general practitioners who prescribed medication for the suspected upper respiratory infection and mental depression assumed to have been precipitated by the departure of the patient's fiance for the army. The prescribed therapy gave no relief. The patient was a dental technician and her past history revealed measles and chickenpox during infancy, and appendectomy at 8 years of age, and a tonsillectomy at 10.

Emergency medical consultation on the day of admission was requested by the attending physician and rendered by the author. Examination revealed a well nourished, well hydrated white female who was lethargic and flushed with fever. The blood pressure was 120/80 with a regular, good pulse of 110. The temperature was 100 degrees F. rectally and the respirations were 20. There was a spontaneous, horizontal, nystagmus with quick movement to the left. The right nasolabial fold was erased in an obvious paralysis. The fundi were normal; the eardrums were intact, and each had a normal light reflex; the thyroid was not palpably enlarged. No nuchal rigidity was present but the neck had a symmetrical fullness throughout and presented palpably enlarged bilateral anterior cervical lymph nodal chain; the posterior chain was only slightly palpable. The patient had difficulty in speaking and seemed to have considerable dysphagia. Examination of the oropharynx revealed severe hyperemia and much tenacious phlegm. The palatine tonsils were absent. The lungs were normal but the heart presented a soft systolic murmur at the apex that was not transmitted elsewhere; tachycardia of 110 regular full beats was present. The abdomen was slightly distended with gas but no tenderness was noted. The liver, kidneys, and spleen were not enlarged to palpation. No masses were discovered and the bowel sounds were normal. The genitourinary system, anus, rectum, bones, and joints did not show any gross evidence of disease. The muscular system revealed no swellings, atrophy, filbrillations, tenderness, or weakness. The reflexes were physiologically brisk; no pathogenic reflexes were elicited and no reflexes were absent. The Romberg sign was negative. The patient was unable to hold up her head without dizziness and she was afraid to stand up and walk because she felt she would fall. Touch and pain sensations were intact as shown by cotton touch and pinpoint discrimination. Further studies were indicated to determine the etiology of fever. Seven major clinical conditions were considered: encephalitis complicating virus systemic disease; poliomyelitis, bulbar type; Guillian-Barre syndrome; infectious mononucleosis with encephalitis; diphtheria; acute leukemia with cerebral hemorrhage; and cerebral tuberculoma.

On the day following admission the consulting neurosurgeon, Dr. J. P. Cascino regarded the presenting clinical picture as limited to a consideration of: encephalitis of unknown viral etiology; Guillian-Barre syndrome and infectious mononucleosis with encephalitis. The chief of staff, Dr. E. Warszewski, who was the attending physician, performed a lumbar puncture which revealed crystal clear fluid under a pressure equivalent to 180 mm. of water with normal dynamics. It contained 10 polymorphonuclear cells per cm. The Pandy test was slightly positive; the sugar, 57 mgm.; the total protein, 64 mgm.; and the chloride, as sodium chloride, 600 mgm. per 100 cc. The specimen yielded no

growth on culture.

The bone marrow aspiration performed on the second day of admission revealed heterogenous moderate cellularity with essentially normal megakaryocytes. The RBC:WBC ratio equalled 1:10. Erythropoieses was normoblastic and granulopoeises was accelerated with a shift to the left. There was a marked increase in monocytoid cells and a moderate increase in plasma cells. The conclusion reached was that of no diagnostic bone marrow pattern but the findings were compatible with infection.

Nasopharyngeal and oropharyngeal direct smears and cultures revealed no diphtheritic organisms but beta-hemolytic streptococcus and staphylococcus aureus were present. X-rays of the chest and skull were essentially negative. Urinalysis was negative and subsequent culture revealed no growth. During the first three hospital days the patient persisted with a 101 F. rectal temperature which receded to 100 degrees F. in the next five hospital days and then returned to normal and remained normal until her discharge from the hospital three weeks from the day of admission.

Initial examination of the peripheral blood disclosed a red cell count of 4,100,000 with a hemoglobin of 12.0 gms. per 100 cc.; and a white cell count of 16,800 with 17 per cent segmented neutrophils, 10 per cent stab neutrophils, 1 per cent eosinophils, 70 per cent lymphocytes, and 2 per cent monocytes. Five per cent of the lymphocytes were considered prolymphocytes and less than 2 per cent were so immature they were difficult to differentiate from lymphoblasts. At least 10 per cent of the lymphocytes had fenestration and heavy nuclear, chromatic network. The Kahn serological examination was negative. On the third hospital day the heterophile antibody titer was 1:128; on the sixth hospital day, 1:64. It returned to normal of 1:32 on the 15th hospital day. The patient's WBC fell from the initial 16,800 to 9,500 within 48 hours after admission and fluctuated between 6,500 and 9,500 during the remainder of her hospital stay. The lymphocytosis, however, changed from the initial 70 to 81 per cent 48 hours after admission with typical Downey cells as described above and fluctuated between 48 and 81 per cent during the first two weeks of hospitalization. The complete blood count on discharge was RBC 3,940,000; hemoglobin, 12.5 gms. per 100 cc.; and WBC, 6,500 with 54 per cent segmented neutrophils, 3 per cent stab neutrophils, 42 per cent lymphocytes, and 1 per cent monocytes. No abnormalities in morphology were seen at this time. Repeated blood examinations which showed lymphocytosis and fenestrated lymphocytes, abnormal heterophil-antibody titer, abscence of significant anemia, and the nonspecific bone marrow study substantiated the diagnosis of infectious mononucleosis.

The patient's spleen was at no time palpably enlarged. Her postural dizziness began to recede seven days after admission and she was then able to sit on the edge of the bed without discomfort. During the next two weeks she managed to get up and walk but maintained her equilibrium with difficulty. Her gait was cautious as if she were afraid she might fall. No abnormal objective neurological findings could be detected on daily examinations to account for this patient's parasthesia in left arm and leg. Her right facial paralysis showed little sign of improvement during her hospitalization even though she was given galvanic physiotherapy treatments for two weeks. The right eye developed the usual conjunctivitis following absence of palpebral movement but this responded to ophthalmic ointments and daily irrigations with isotonic solutions. The only other medication consisted of 600,000 units of penicillin and 1 gram of dihydrostreptomycin daily and large doses of vitamin B complex orally.

After the patient's discharge she was examined bi-monthly for the following three months and then monthly for nine months. The spontaneous, horizontal nystagmus receded to an elicited, horizontal nystagmus two weeks after discharge from the hospital and has persisted up to the present time. The right facial paralysis responded slowly to galvanic and massage therapy administered three times weekly over a period of three months. The physio-therapist then believed that the patient had received maximum benefit from galvanic therapy and instructed her to continue with daily facial massage only. After 12 months of diligent effort, the forehead wrinkle returned along with increased strength in her right palpebral movement. The weakness in the right nasolabial fold has persisted. For two months after discharge from the hospital the patient retained a cautious gait due to a feeling of insecurity when standing;

she felt as if she were learning to walk all over again.

SUMMARY

A case of infectious mononucleosis with encephalitis is presented in which the patient has permanent central nervous system damage as manifested by a persistent, elicited, horizontal nystagmus and residues of right facial paralysis 12 months after onset of the disease. It is hoped that infectious mononucleosis will be considered a formidable disease and not dismissed casually as a nuisance, technician's, or medical student's disease with only transient effects.

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DATA ON PHYSICIANS

There were 211,680 physicians in continental United States at the end of 1951, according to the annual licensure report, prepared by the AMA's Council on Medical Education and Hospitals. During the year, 6,282 persons obtained licenses for the first time. The net gain of 2,640 results from subtracting the estimated number of deaths from the 6,282 newly licensed physicians. In order, the following five states had the greatest number of first time licentiates: New York, 743; California, 526; Illinois, 437; Ohio, 394; and Pennsylvania, 388.

A total of 12,008 licenses were issued in the United States and possessions last year by examination or by endorsement of credentials. This total includes previously licensed physicians who moved to other states. During 1951, the nation's 72 approved four year medical schools graduated 5,018 new doctors who later took license examinations. Of these, 4,874 (97.1 per cent) passed. In comparison, only 842 (57.9 per cent) of the 1,455 graduates of other schools passed state board examinations. Altogether, 6,473 persons took state boards. Of these, 5,716 (88.3 per cent) passed. The National Board of Medical Examiners, whose certificate is recognized by all states except Florida and Texas, examined 7,738 candidates, of whom 97.7 per cent passed. The high passing rate is explained by the fact that the Board did not examine graduates of unapproved medical schools, extinct approved schools, or schools of osteopathy. It examined only 12 foreign graduates. *J. Student A.M.A. Oct. 1952.*

COUNCIL MEETING MINUTES

MINUTES OF COUNCIL MEETING, DECEMBER 14, 1952

A regular meeting of the Council of the Illinois State Medical Society was held at Hotel Sherman, Chicago on Sunday, December 14, 1952, with the following present: Sweeney, Stone, Lewis, Kirby, Muller, Lundholm, O'Neill, Oldfield, Vaughn, Reichert, Blair, Reisch, Newcomb, Montgomery, Fullerton, Hamilton, White, Hopkins, Hutton, Coleman, Cross, Goodyear, Hayes, Bornemeier, Hoeltgen, Limarzi, Hirsch, Hedge, Mr. Ralph Carpenter, Leary, Neal, Camp and Frances Zimmer. Minutes of last meeting were approved.

Secretary had mailed his regular report before the meeting, and gave a supplementary report with financial report of the Treasurer. Letter from Governor Stevenson in reply to letter sent following last meeting telling the Governor the fine work Roland Cross had done as Director, State Department of Public Health. The Governor stated that he was aware of the work of Cross and improvements in the health of the Illinois people. Thanked the Society for the fine cooperation given to Cross and his Department. Secretary gave a report of the work done from his office of the Physician Placement Service. This function carried on through his office since the Warmanpower Commission Procurement and Assignment Service for Physicians ended one year after the end of World War II. Some 70 physicians aided in finding suitable rural locations, giving details of plan now in operation to investigate both the physicians desiring a location, and the community and what it has to offer. The rather lengthy report was ordered mimeographed and a copy sent to members with the minutes of this meeting. Secretary gave a brief report of actions taken by the A. M. A. House of Delegates at the December Interim Session held in Denver. Some resolutions referred to, with recommendations of the reference committees, and final action taken by the House. Among these the problem of fee splitting, and that of Branch Practice. Judicial Council had ruled that physicians located some distance from a clinic, sending patients there for care, and receiving a percentage of fees collected, was unethical practice on the part of the clinic as well as the referring physician. Judicial Council failed to give a legal definition of fee splitting, and ruling as to what types of fee division when two or more physicians were jointly participants in giving care to patients, were ethical and what types are unethical. Letter from Councilor Greening was read, he being in Arizona, office in Chicago had been closed. Greening said he would leave it to the judgment of the Council as to whether a resignation should be accepted and a replacement made for the remainder of his term. Secretary said this should be left to the judgment of the Chicago-Cook County members of the Council.

SWEENEY reported as president, telling of his recent assignments, meetings attended and various things which had been referred to him, as president of the Society. Told of some appointments he had made recently as requested by the A. M. A. and other organizations.

LEWIS, as president-elect, has attended a number of meetings, including the one at Pinckneyville honoring James S. Templeton, who was selected as the outstanding general practitioner of Illinois during October. He told of some assignments given to him at the A. M. A. session in Denver, he still being in the Illinois delegation.

STONE reported as Chairman of the Council, telling of his many meetings recently attended, and some functions he had had delegated to him. Was present at the meeting at Pinckneyville, honoring Templeton on No-

vember 18. He also attended the P. G. Conference at Joliet December 10, excellent program, but rather poor attendance, especially for the evening session. Individual Councilors were called upon for their reports between reports of committees. O'Neill referred to a physician in his district, not yet a citizen, but the county society had erroneously accepted him for membership. This is contrary to the By-laws, and should the local society refuse to accept dues for the next year? It was decided that the Secretary should notify all component society secretaries of this By-law, and insist that dues not be accepted for 1953 from any other than American citizens. O'Neill referred to a project under consideration; a hospital was considering taking small chest film for all patients admitted; the T. B. Chapter would pay expense up to $4000.00 and the hospital was asked to assume the rest of the cost. Would like the opinion of Roland R. Cross, as to whether or not this should be done. Cross stated that all work which would aid in the early detection of tuberculosis should be encouraged and that a program of education should be developed in all Illinois counties. BLAIR told of the recent post graduate conference held in Peoria which was well attended and of the outstanding program. Also told Council that incoming Governor Stratton had appointed Judge Vera Binks of Kewanee to head the State Department of Registration and Education.

BLAIR reported as Chairman of the Educational Committee, telling of the recent meeting held over the facilities of the Bell Telephone System, this at 10:30 P. M., November 11, the conference lasting 15 minutes with all members on the line, and at a total cost of $22.40. Referred to renewal of the "TV" Health shows, which had been off the air for nearly six months. Referred to possibility that the show would need a sponsor, to continue its operation at a decent time. This would entail some new problems which would need to be approved by the Council before being placed in operation. Blair referred to other functions in the Educational Committee office.

HOPKINS reported as Chairman of the Committee on Medical Service and Public Relations telling of meeting of the committee the previous day and some of the current problems which were discussed. Called on Leary to continue the report, on public relations activities, LEARY plans to continue the field work as started last year; he will again go into counties to meet officers and key men of component societies to tell what the Society is doing along these lines, get their suggestions, and bring them back to the committee as a whole. Leary asked for Council support, and would like their suggestions, as to how these small conferences may be improved. Told of his work in preparing material to be submitted to the A. M. A. Board of Trustees, in presenting James S. Templeton as this society's candidate for outstanding practitioner of the nation. Referred also to Templeton appearing on "This is Your Life" TV show presented from Hollywood. Told of meetings of the Interprofessional Council and the need for better representation from this Society at these conferences. Currently Hedge, Stone, Neal, Leary attending them along with the chairman, Wayne Slaughter.

LEARY presented report for Post Graduate Education Committee in absence of the chairman, George Hellmuth. Meetings have been held so far in Chester, Peoria and Joliet. Does not seem possible at this time that the complete series as tentatively outlined can be presented. To do so would necessitate scheduling many conferences during mid-winter and this might prove unsuccessful with a number during the winter season. Meetings have been well attended, and programs excellent. Medical schools and hospitals have been cooperating well indeed. Urged individual councilors to do their part in recommending time, and type of programs desired for the places tentatively scheduled to date. HAMILTON referred to one recently held in his district with fairly decent afternoon attendance, but very few remaining for the dinner and after-dinner presentations. There were some conflicts, local men not remaining for evening session. Wonders if it might not be desirable to end the P. G. conference at 5:30 or 6:00 P. M., having no dinner or evening session. Also suggests possibility of having fewer speakers and longer presentations, and give the host society and others in the area the opportunity of making their own recommendations as to subjects, speakers, etc. Further discussion by White, Camp, Fullerton, and Blair. Limarzi discusses the subject of post graduate conferences, suggesting that a survey be made at the local level to see what the members actually want. He believes 20 minute papers are sufficient, and this shorter time tends to hold the speaker to his subject, than a longer one. Reisch stated that the local survey has been made in Sangamon County and they know the type of program they want presented. Suggests that the talks and program material in general be varied, to appeal to all types of practitioners who will attend. They propose to have a different type of program when the conference is presented in Springfield during April. NEAL tells of Superior Court of Cook County upholding the decision of the Department of Registration and Education two years ago, in refusing approval to the Chicago Osteopathic School as a medical school whose students could take the unlimited license examinations. Some other decisions and actions were reported by Neal. Likewise Neal referred to the opening of the Illinois Legislative Session the first of January and some matters pertaining to health, which may be presented.

LIMARZI reports as Chairman of the Scientific Service Committee, telling of recent activities, speakers for many county society meetings arranged. One society recently came to the Chicago office of the Society, and while there arranged a full schedule of meetings for the year 1953, for his Society. A sub-committee has been working on the proposed new list of speakers — subjects, and some of their recommendations were presented to the Council by Limarzi. It is believed that when finally prepared, the booklet should be good for five years, with perhaps a supplementary sheet added annually to keep it up to date.

HIRSCH told of the activities of his committee de-

sirous of recommending changes in the present Illinois Coroners Act. Efforts underway to get the cooperation of the Illinois Bar Association. His report one of progress, and he hopes to have more definite information to present at an early meeting of the Council.

HUTTON told of meetings of a small group from the larger Committee on Medical History and he believes it is about time to consider the hiring of the individual to write the proposed book. Some debate as to whether a lay or a professional writer should be selected. Proposed chapters have been written by specialists in various branches of medicine, and the material must be looked over carefully, eliminating "overlapping", and getting the information better organized. Some correspondence with publishing companies, and committee expects to have more figures available to present at an early Council meeting. Report is one of progress, but Hutton believes it will soon be time to make final arrangements to actually produce a book. HUTTON also tells of the work of the Committee on the Eradication of Tuberculosis, which has been operating some eight or nine years. Believes that the point has been reached that the time and efforts of the Society will be lessened. Perhaps some recommendations will be made for changes in the tuberculosis laws in Illinois at the coming legislative session. Told of the Chicago Medical Society requesting a public health survey of the facilities for tuberculosis cases in Cook County. Believes it would be well to ask Cross to discuss the proposal. CROSS stated that he has received the request that he ask the Public Health Service to make the survey, but before this is done he would like to have the approval of the M. T. S., which he was told would probably be forthcoming soon.

MOTION: (Hamilton-Lundholm) that the Council request Dr. Cross to make an effort to obtain the necessary information as necessary to authorize the proposed survey. Motion carried. HUTTON reported as Chairman of the Editorial Board which last met October 21. Color for Journal again discussed, and it was agreed that beginning with the January issue, a red cover would be used for one year. Still considering the inclusion of some type of drug column to give information on newer drugs, and their uses. Big problem is that of source material. Several suggestions considered, but so far not definitely approved. Committee hopes to have definite plan to put into operation. Discussed further development of News of the State, and suggested that Woman's Auxiliary may be asked to aid in procuring more local news in all parts of the state. Committee on Medical Economics now endeavoring to develop more interesting articles for their section in the Illinois Medical Journal. The secretary has been asked to consider developing a new section "Know Your Society" in which the members would get general information on the various committees and their work. This should be of value to many members and will no doubt be undertaken in the near future. The Journal now being mailed from Mendota, where the printing is done, instead of from Oak Park. Journal advertising rates have been increased between 15 and 20% after January 1, or at expiration of existing contracts.

OLDFIELD discussed the inability of Greening to attend Council meetings. Stated the C. M. S. members have met, and believe it advisable to accept the resignation of Dr. Greening, and permit full membership representation from the C. M. S. Motion: (Oldfield-Vaughn) that it would be wise to accept the resignation of Dr. Greening, and Secretary be instructed to write letter to him explaining that no vacancy can be left for a year and a precedent be set in this manner. Motion carried. Oldfield stated that the C. M. S. members of the Council would like to recommend George Hellmuth to fill the unexpired term of Dr. Greening. Motion: (Blair-Reisch) that the Council accept the recommendation of the Chicago members and approve Dr. Hellmuth as the replacement for the unexpired term (to May, 1953). Motion carried.

COLEMAN referred to a meeting of the Medical Advisory Committee to the I. P. A. C. held the previous evening, December 13, at which many important subjects were considered. County medical advisory committee members are invited to sit in at each meeting to give them a first hand view of the many problems the committee considers. The Commission is worrying about the increasing costs for drugs in the program. The surplus as provided through the budget for its operation, has gone down rapidly during the past three months. A resolution was introduced by a member and approved by Mr. Keaster, whereby physicians be permitted to add $1.00 for dispensed drugs and list, but not itemize the drugs. Some physicians apparently are seeing chronic cases too often, which adds materially to the cost of medical care. Some problems in radiology had arisen, and will be brought in detail before the committee, perhaps at its next meeting.

REISCH reported as Councilor for the 5th District; the big problem before the Sangamon County Society is that of Branch Practice. The Springfield Clinic had representatives appearing before the Judicial Council of the A. M. A. at the Denver Interim Session the first of December. Sangamon County was represented by one of its officers. Apparently by going directly to the Judicial Council, the Clinic had by-passed the county and state societies. Efforts have been made at the local level to get a complete discussion of branch-practice, and the operation of the clinic involved. On December 9 the Board of Directors of the Sangamon Society, at a special meeting, heard the report of the group at which time they presented a printed presentation of some 67 pages. Later the medical society voted on the branch practice plan and the vote was that the Sangamon County Medical Society considered the branch practice of medicine unethical, based upon the Principles of Medical Ethics of the American Medical Association. The Clinic would like to present its case to the Council of the Illinois State Medical Society. Motion: (Lundholm-Fullerton) that each county medical society in Illinois be given the findings of the Judicial Council relative to branch practice. Motion carried. By proper motion, (Hamilton-Oldfield) the

Sangamon County society was to have its attention called to Chapter XII of the By-laws on Discipline, of the Illinois State Medical Society. Chairman Stone asked Reisch to procure additional copies of the mimeographed material prepared for the members of the Sangamon County Society, to be sent to each member of the Council.

By proper action, (White-Fullerton) John W. Neal was retained as General Counsel for the State Medical Society for 1953.

NEWCOMB, as councilor for the 6th district, stated that the Morgan County Society would like to have 1953 annual dues remitted for a member, a polio victim, who is practicing a little medicine from a wheel chair. The county society has recinded his dues, and requests that the State Society and A. M. A. do likewise. By proper action, (Newcomb-Oldfield) that this be done, and the Secretary's request be referred to the A. M. A. Motion carried. Two men had been elected to membership in Morgan County who had not acquired citizenship. This was contrary to the State Society By-laws and they have been so notified. Wonders what may be done to permit them to retain hospital staff appointments.

NEWCOMB told of a recent meeting of the Committee on Cardiovascular Disease, with representatives of the State Department of Public Health and Chicago Department of Health present. Three diagnostic clinics had been established in Springfield, Herrin and Chicago. Patients are invariably referred to their family physicians. Reference was made to the Heart Bulletin, published every three months. Efforts will be made to get funds to make this Bulletin available in downstate areas. The State Health Department and Chicago Health Department would like to send representatives to the meetings of the Heart Committee, to aid in developing a well worthwhile program.

GOODYEAR stated that on November 4, Election Day, about 85% of physicians' offices in Macon County were closed. He stated that Branch Practice problems are not confined to one area in the state, and this information, as that pertaining to fee splitting should go to every component society in the state.

CROSS reported as Director, Illinois Department of Public Health; thanked the Council for its expressions relative to his work as Director, and its desire to see him retained in that capacity. Tells of his great appreciation of the fine cooperation that has existed between the Department, the State Society and physicians of Illinois in general. Hopes this may be indefinitely retained. Discusses in detail, work done by a Team on Infectious Diarrhea of the Newborn, and by the Mobile X-ray units in the tuberculosis case-finding program. (These to be attached to the minutes of this meeting.) Cross told of a recent meeting he attended in Washington relative to the Doctor Draft Law. Seems quite likely that some changes will be made in the procedure in the near future. The use of Gamma Globulin in the prevention of paralysis in poliomyelitis was also discussed. The American Red Cross has agreed to make blood available for this purpose. Some 1,600,000 units have been used. The material will be distributed through the state on a limited basis, and epidemic areas will be cared for. Forms are prepared to be filled out by physicians using it, in order to cooperate properly in the program. The amount of rabies vaccine used in Illinois has increased alarmingly. There is a definite danger in its use, and it should not be given unless absolutely necessary. Extreme care should be taken and the public should be informed of the correct course to follow. Cross urged that a suitable editorial should appear in the Illinois Medical Journal on this subject. REICHERT stated that at Children's Memorial Hospital they have had two fatalities and eight cases of permanent paralysis from rabies vaccine. Symptoms of paralysis should be checked at all times; they usually appear after the 9,10,11th injection. The best procedure is to inform the family of all aspects of the use of the serum and let them aid in making the decision. Editorials will be prepared for publication in the Journal and appear in an early issue.

HEDGE reported as Chairman of the Grievance Committee, stating that the complaints are now being investigated, and a report will be given at the next meeting.

MULLER, as General Chairman, Committee on Arrangements for the 1953 meeting, stated that committees are being selected, and some members will be from societies in counties near Cook County in addition to the C. M. S. membership. The Woman's Auxiliary will have their supper party on Tuesday evening, as previously suggested.

HOELTGEN gave his report as Chairman of the Committee on Nursing; this a report of progress necessitating no action at this time. His report was attached to the minutes of the Council meeting. In the discussions following Hoeltgen's report, the matter of accreditation of hospitals having training schools, was given much consideration. The problem of reciprocity for the nurses who receive training in unapproved hospitals makes the situation quite serious. The question as to whether it might be advisable to have this accreditation left to the State Department of Registration and Education was discussed.

HAYES gave the report of the Medical Benevolence Committee, telling of the balance in the fund, and the expenditures. The present number of recipients, 33, changing from month to month. Monthly benevolence checks total from $1,350.00 to $1,500.00 per month. Approximately 80% of the beneficiaries are widows of former members. One case of an elderly physician hospitalized, and needing more assistance was discussed, without giving the name of this man. By proper action the Council voted to permit the Committee to increase the monthly allowance during the period of hospitalization.

Mr. Ralph Carpenter, Secretary of the Interprofessional Council, and a pharmacist, was a guest at this meeting of the Council, and was asked to give his impressions of its work. Mr. Carpenter expressed his gratitude at being permitted to attend the meeting and discussed in detail the organization and proposed work of the Council. The group was formed as a cultural,

scientific and legislative union of the five participating organizations. All of them interested in improving the health of Illinois people and in giving any information requested by legislators relative to proposed enactments which would affect health conditions. Mr. Carpenter believes that the Council will be of much benefit to the organizations represented, all interested in health, and that they will be drawn closer together in a common cause, through its operation.

MONTGOMERY reported on the efforts of himself and Fullerton to get an Auxiliary to the Southern Illinois Medical Society, but the ladies of the area preferred to remain as members at large and therefore no new Auxiliary chapter was formed.

FULLERTON recently presented four Fifty Year Club certificates and emblems. One of the recipients had taught school for 21 years before studying medicine, and yet he had completed fifty years in practice, which was unusual. He referred to a resolution approved by the St. Clair Society, which will be presented to the House of Delegates at the 1953 annual meeting, and relative to the actions of the Illinois Public Aid Commission. No action necessary at this time by the Council.

REICHERT referred to a letter received by the Secretary from Herbert Kobes, from the Division of Services for Crippled Children, University of Illinois. With it was submitted a fee schedule for use by the Division. Reichert believes that the material should be mimeographed at the Secretary's office and sent to all members with the minutes, so it can be acted upon at the meeting on January 11. Motion: (Reichert-Montgomery) that same be done. Motion carried.

MOTION: (Vaughn-Montgomery) that Council approve the sending of "Today's Health" to Illinois members of state and federal legislature, as gift subscriptions. Motion carried.

MOTION: (Blair-Sweeney) that membership of the Society in Illinois State Chamber of Commerce be renewed for 1953. Motion carried.

MOTION: (Fullerton-Newcomb) that physicians listed as recommended by component societies be elected to Emeritus and Past Service-Retired Memberships, all proven eligible for these memberships. Motion carried.

By proper action the bills as audited by the Finance Committee be approved, and Secretary instructed to pay the same. Motion carried.

Adjournment at 3:45 P. M., to meet in regular session on January 11, 1953.

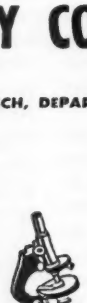
Harold M. Camp, M.D.
Secretary-Treasurer

NONSPECIFIC URETHRITIS

It is true that a diagnosis of nonspecific urethritis always has a tendency to lend itself to disbelief and ridicule. Every urethral discharge must be considered specific unless proved otherwise. In this respect one should never overlook the possibility of tuberculosis. On two different occasions I have seen a persistent urethral discharge, resistant to all forms of treatment, due to the tubercle bacillus. When one considers a large group of young men undergoing severe physical training, under emotional strains, the lack of proper sexual hygiene, as we find in the armed forces, it is not difficult to understand why a nonspecific urethral discharge would be common. In a study of prostatic secretions, staphylococci, streptococci, pneumococci, and colon bacilli were noted. Gonococci were found in a very few instances. It was the feeling of the physicians who treated these men that they had a nonspecific prostatitis which in turn produced a nonspecific urethritis. It is known that the prostate may become infected from direct extension of an acute gonorrheal urethritis by way of the prostatic ducts. This is the usual method of involvement of the prostate from a nonspecific urethritis. In regard to primary nonspecific prostatitis, the method of infection of the prostate is quite different. *Theodore R. Fetter, M.D., The Early Recognition Of Prostatic Disease By The General Practitioner. West Virginia M.J. Nov. 1952.*

PATHOLOGY CONFERENCES

EDWIN F. HIRSCH, DEPARTMENT EDITOR



Synovioma of the Foot

J. C. Sherrick, M.D.
Wesley Memorial Hospital

CLINICAL HISTORY

This 25-year old white female housewife was admitted to the hospital because of pain in the left foot.

PRESENT ILLNESS: The patient was well until 8 years before admission when she noted sharp pain on weight bearing in the lateral aspect of the left foot near the proximal end of the left fifth metatarsal bone. The pain was not constant but was worse with weight bearing, so that it was necessary for her to walk with the foot everted and the toes flexed. She consulted many physicians but received no relief for her symptoms. In the past 6 or 8 months there was progressive enlargement at the left 5th tarsometatarsal joint on the plantar and dorsal surfaces of the foot. The enlarged region was painful. She was admitted to the hospital for examination and treatment.

PAST HISTORY. Non-contributory.

PHYSICAL EXAMINATION: Temperature was 98.6 degree F., orally, pulse 100 per minute, respirations 12 per minute and blood pressure 138/86 mm. Hg. The patient was a well developed, obese, 25-year old white female, not acutely ill. The head, neck, heart, lungs and abdomen were normal. A poorly defined mass 3 cm. in dia. was over the proximal end of the fifth metatarsal. It was firm, tender and fixed to the underlying tissues, and extended on to the plantar surface of the foot as well as the dorsal surface. Movement of the foot, toes and ankle was not impaired and neurological examination was normal.

LABORATORY DATA: The urine was normal. The red blood count was 4,330,000 per cu. mm., the hemoglobin 13.2 gm. per 100 cc., the white blood count 10,650 per cu. mm. and the differential count showed polymorphonuclear leukocytes 59, lymphocytes 38 and monocytes 3. The Kahn was negative. X-rays of the chest were normal. X-rays of the left foot showed a poorly defined soft tissue mass involving the region of the fifth tarsometatarsal joint. It did not appear to invade the bone.

HOSPITAL COURSE: On the day after admission an operation was performed.

CLINICAL DISCUSSION

Dr. E. D. W. HAUSER:* The problem in this case is that of the differential diagnosis of

*Attending Surgeon, Passavant Memorial Hospital.

a tumor of the foot. First, we must consider tumors of the skin, which are the most common and important. I will mention verrucae, calluses, keratoses, epidermoid cysts and melanomas. None of these are seriously considered here. In general these tumors should be surgically removed although in some cases getting rid of the cause of the lesion will make surgery unnecessary. Pigmented nevi of the sole of the foot should be removed without waiting for enlargement or ulceration. My experience has been that by the time a nevus becomes malignant the patient does not live long enough to justify any major surgical procedure.

Next we must consider tumors arising from beneath the skin. First there is ganglion which may occur in the foot as well as the wrist, and which usually arise from strain or friction of some type. Usually when the irritation is removed it subsides. Tendon cysts may occur from similar causes and may similarly be ameliorated by changes in pressure or dynamics in the foot. Inflammatory lesions of various kinds occur in the subcutaneous tissue. Foreign body granulomas may follow penetrating wounds. Syphilis must always be considered, although it usually appears as a periostitis. Tuberculosis would be very rare in this situation but might occur as a tenosynovitis. A localized fungus infection would be even more rare.

A true tumor is the best possibility. A vascular tumor should certainly be considered. In this group is an arteriovenous aneurysm, but in the absence of bruit or pulsation I think we can disregard it. We have to consider also calcification of a large hematoma. Following trauma there might be myositis ossificans but either of these lesions would show calcification by x-ray. Hemangioma can be very difficult to diagnose. Sometimes flecks of calcification show in the tumor and the bone is eroded, however there may be no bony changes. Tumors arising from the bone itself should be mentioned. Exostoses may be large and generally are a reaction to inflammation. They usually subside with treatment of the inflammation or irritation. Chondroma, osteoma and giant cell tumor would be visible on the X-ray as would be bone cysts or a Brodie's abscess. A related lesion that might not appear on the X-ray would be Dupuytren's contracture. There is a fibrous hyperplasia which is usually seen in the hand but which may occur in the plantar fascia. It has the appearance of fibroma and is painful. Neurofibroma should be considered. At first this may appear as an inflammatory lesion, but later it is a bulbous well circumscribed tumor of the nerve. The pain associated with the lesion may be due to impingement of the nerve between the heads of the metatarsals. Neurilemmoma is a true neural tumor. The ones I have seen have been larger. Lipoma and fibrolipoma are rare and usually asymptomatic, although occasionally if inflamed, they may cause symptoms. Among malignant tumors one would have to think of metastatic tumor, which for practical purposes is ruled out by the absence of bone involvement in the X-ray; and primary tumor. I will consider synovioma and fibrosarcoma.

The duration of eight years speak against malignancy but from my own experience I must say that one is never certain. Even though the lesion has been present for a long time the picture suggests tumor. Synoviomas may be slow in developing and then may suddenly flare up and spread over the body. Even from a pathological report there may be a good deal of doubt as to whether a synovioma is benign or not. I approach this problem with a good deal of uncertainty as to the exact diagnosis. As far as the patient is concerned this is a questionable lesion and therefore should be removed. If I don't know what a lesion is, it is best to take it out. The x-ray appearance may help. Here we see a shadowy outline and some actual swelling. There is no calcification. If there were strands of calcification I would think of myositis ossificans. If there were flecks of calcification I would think of hemangioma. If the tumor were translucent I would think of lipoma. None of these things is present. The appearance is consistent with neurilemmoma. A fibroma should be smaller and more dense. Again I wish to say I approach all these tumors with a great deal of humility. I think the important thing to decide is what to do for the patient, and in this case there is no doubt but that the tumor should be removed completely.

DR. PATRICK RILEY: There is a vaguely defined soft tissue mass about the shaft of the 5th metatarsal bone. The 4th and 5th metatarsals are pushed apart slightly. The bone is not remarkable. I do not see any characteristics in the mass which would give a definite diag-

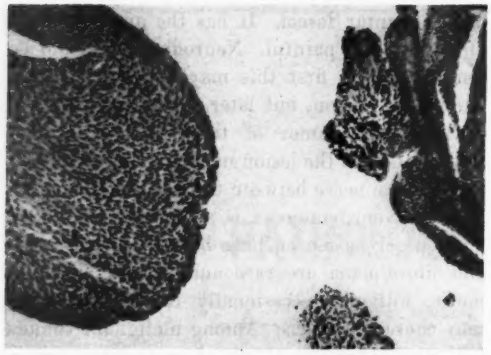


Figure 1. Section showing tumor in synovial villi.

nosis.

DR. HAUSER: A great deal that one feels with one's hands cannot be described. In this case I would be interested in the consistency of the tumor. I would like to know if it is lobulated or firm, and how much it adheres to the skin or underlying tissues.

DR. EDWARD L. COMPERE: The tumor was firm and smooth, not lobulated. It was moderately tender. It was rather fixed. Although the skin over it could be moved, it did not move well.

DR. THOMAS C. LAIPPLY: What was your diagnosis, Dr. Compere?

DR. COMPERE: First, fascial type of fibrosarcoma; second, synovioma.

DR. LAIPPLY: Don't you think eight years is too long a duration for fibrosarcoma?

DR. COMPERE: Eight years would be quite an unusual duration. I am a little skeptical of the history of eight years duration. There was a period of only six or seven months in which the patient had enough trouble with the foot to consider having something done about it. Previously she had only transient soreness in the foot. This may have been due to constant irritation from imbalance of the foot rather than tumor.

DR. HAUSER: We do not know when synoviomas start. They may be present a long time before we discover them. Their onset is characteristically insidious.

DR. LAIPPLY: Which would be more likely for an eight year history, synovioma or fibrosarcoma?

DR. COMPERE: On the basis of history alone synovioma is the best diagnosis. I considered fibrosarcoma first because of the location. Also I thought the tumor would be more firm than this was if it were a synovioma.

CLINICAL DIAGNOSIS

Fibrosarcoma or synovioma of foot.

DR. HAUSER'S DIAGNOSIS

Synovioma of foot.

ANATOMICAL DIAGNOSIS

Synovioma.

DR. LAIPPLY: At operation a tumor approximately 5 cm. in diameter was found encircling the shaft of the left 5th metatarsal bone and apparently rising from the region of the tarsometatarsal joint. As is typical of synoviomas it appeared to be circumscribed but the surgeon could not be sure that all the tumor had been removed. Microscopically the tumor was characteristic of a synovioma or synovial sarcoma. (Fig. 1) Formation of pseudoacini was prominent in some of the sections while other sections consisted of masses of spindle shaped cells that varied only moderately in size and shape. (Fig. 2) Rare mitotic figures were present and mucoid-like material was shown between the cells by special stains. Cytologically

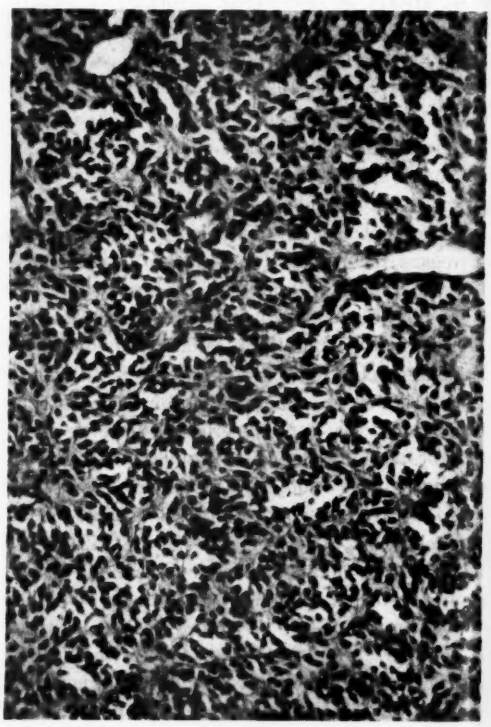


Figure 2. Section of tumor showing pseudo acini.

these tumors may appear benign but we know from experience that they are potentially dangerous and they metastasize widely. Dr. Hauser, would you care to say something about further treatment? Would you consider any additional procedure necessary?

DR. HAUSER: My experience with these tumors has been fortunate. If the tumor has been completely removed, nothing further is necessary. If not, amputation should be done. I think postoperative X-ray treatment is of little use. Metastases may be treated with X-ray when they appear, although in my experience this has not altered the course of the disease.

DR. COMPERE: A few years ago we thought there was no case of a proved synovioma surviving as long as five years. Now we know that a five year survival has been surpassed by a few but not by very many. These tumors are slow growing and slow to metastasize. Apparently they spread by extension in tissue planes long distances from the primary site so that even amputation does not as a rule prolong life. I have one patient surviving more than five years after operation; he had only local removal because he refused amputation. At present he is apparently well; in fact, he has recently been accepted by the Navy. In today's case the tumor was difficult to remove as it extended into the intermuscular planes. It was thus necessary to amputate to remove it all.

DR. LAIPPLY: Because the surgeon was not certain that all the tumor had been excised, an amputation was performed eleven days after the original operation. There was definite tumor present in the amputated extremity near the site of the original tumor, so there is no doubt but that this patient would have had further difficulty. We purposely called this tumor a synovioma rather than a synovial sarcoma because of its unusually benign appearance. I predict that this patient will do well.

Clinically these tumors enlarge rather slowly, the average duration in one series of 98 autopsied cases being 2.6 years. (1) Twenty-five per cent are preceded by a history of trauma which may or may not have significance. In 42 of the cases the average duration was 5.7 years from onset to death. The shortest survival period was 5 months and the longest 16 years. In 50 cases most of the metastases were in lungs and regional nodes. The average age of onset was 32 years, and the proportion of males to female was 3 to 2. The majority of the tumors are located in the lower extremities. When in the upper extremity the most common location is the region of the elbow.

The anatomical features of these synovial tumors are as previously described in this case. They are grossly circumscribed but unencapsulated; are nodular, firm, and may have foci of calcification. The tumors seldom project into the joint space. Microscopically the typical cell is spindle shaped, but where pseudoacinar formation is prominent, the angular character of the cells may simulate epithelium.

DR. WM. B. WARTMAN: Many of the cases reported as synovioma are doubtful. The criteria for the diagnosis should be: first, origin from synovia and second, a typical histologic picture. These tumors show wide variation in morphology and many blocks must be made. Some of the sections of this tumor look like fibrosarcoma. In general soft tissue tumors are poorly treated. Many of them recur, and may show gradual increase in malignancy in successive recurrences. Complete removal rather than enucleation is mandatory, and if this cannot be done amputation is necessary. I think biopsy and frozen section should be used more often in these cases.

DR. LAIPPLY: In my opinion frozen section is of limited value in differentiating between a well differentiated malignant tumor, such as many synoviomas, and a benign tumor. The frozen section would ordinarily establish that the lesion was a tumor but there would be uncertainty as to whether or not it was malignant. It seems to me that when the surgeon recognizes a lesion as tumor his problem is the same—i.e., complete excision, because, if incompletely removed, benign as well as malignant tumors will recur.

DR. WARTMAN: It is important to distinguish benign tumors, such as ganglioneuromas or polymorphous cell tumors from those which may become biologically malignant. The surgeon's golden opportunity is his first one, and I think every possible aid to diagnosis should be used. Frozen section is always better than visual examination.

DR. LAIPPLY: Dr. Wartman and I are evi-

1. Haagenson, C. D. and Stout, A. P.: Synovial Sarcoma, Annals of Surgery 120: 826, 1944.

dently not at all in agreement as to the value of frozen sections for diagnosis of connective tissue tumors that do not show marked cellular pleomorphism. It is my opinion that in tumors comparable to most synoviomas frozen section preparation would not accurately establish them as benign or malignant and in the present case would not have led to the correct diagnosis of synovioma.

DR. COMPERE: In our experience frozen section diagnosis has not always been accurate. I am not satisfied that this procedure would of necessity be helpful, or even without error in such cases.

SPACE MEDICINE

The present limit for motor driven aircraft has reached 55,000 feet while jet propelled aircraft has risen to 75,000 feet. We are now dealing with rockets, and for these there is no altitude limit. We know from our studies in aviation medicine that by increasing the percentage of oxygen breathed, man may be kept fully efficient up to 34,000 feet. The increase in the oxygen percentage increases the partial pressure of oxygen in the alveoli, and on this life depends. Above 34,000 feet, man becomes progressively less efficient even though breathing pure oxygen. This is because the atmospheric pressure is low that the pressure of oxygen breathed is too low to maintain efficient existence. Above the level of 34,000 feet the cabin of the plane must be pressurized, which can be done by superchargers. In so far as atmospheric conditions are concerned, complete anoxia occurs at 52,000 feet and at 65,000 feet, the body fluids will boil. At extremely high altitudes, ambient air is no longer usable for the crew. It would require too bulky equipment to compress it. When we get above 12 miles the ozone concentration is above the toxic level. Furthermore, excess water vapor, carbon dioxide, and other toxic gases must be eliminated. *Louis H. Bauer, M.D., Space Medicine. West Virginia M.J. Nov. 1952.*

BRAIN TUMORS

Brain tumors fall roughly into four classes. First are the gliomas, which are the true brain tumors, made up of glial cells. These tumors are potentially infiltrating and require excision of surrounding normal tissue before complete extirpation is accomplished. Such tumors comprise approximately 60 per cent of all tumors. At least half of the gliomas infiltrate widely, their complete removal is impossible, and their recurrence is certain. A second group of tumors is composed of fibroblasts — namely, the meningiomas and the acoustic neuromas, which comprise about 20 per cent of all brain tumors. These are not true brain tumors but intracranial tumors, since their cells are not of glial origin. They do not infiltrate the brain but crowd it to one side. If surgically accessible, they and their attachment to the meninges may readily be completely extirpated without chance of recurrence. A third group is made up of the glandular tumors, mostly pituitary in origin, with an occasional pinealoma. They account for 10 per cent of all tumors. Last, grouped together loosely, are the metastatic lesions, the congenital tumors, dermoids and epidermoids, the vascular tumors, and other varieties, again forming about 10 per cent of the entire group. *Francis C. Grant, M.D. Notes On A Series Of Brain Tumors., New York J. Med. Oct. 15, 1952.*

NEWS OF THE STATE

BUREAU

Society News.—Karl D. Nelson, Princeton, discussed "Treatment of Cardiac Emergencies" before the Bureau County Medical Society at its meeting in St. Margaret's Hospital, Spring Valley, January 13.

COOK

Eighty-Five Years of Age.—Dr. Edward H. Ochsner observed his eighty-fifth birthday, January 12. Dr. Ochsner, who graduated at Rush Medical College in 1894, is a past president of the Illinois State Medical Society.

Dr. Webster Given New Post.—Dr. Augusta Webster, a member of the Cook County Hospital since 1934, has been named chief of obstetrics at the hospital, succeeding Dr. J. E. Fitzgerald. Dr. Webster is said to be the first woman to have charge of a department at the county hospital.

New Acting Head at MTS.—Dr. Meyer Lichtenstein has been appointed temporary medical control officer of Chicago and medical superintendent of the Municipal Tuberculosis Sanatorium, to succeed Dr. Otto L. Bettag, who became state director of public welfare.

New Acting Dean at Illinois.—Dr. Roger A. Harvey has been appointed as acting dean of the College of Medicine by the University of Illinois Board of Trustees. The appointment was effective on Jan. 1.

Dr. Harvey, 42, presently serves as professor of radiology and head of that department at the University. He also is radiologist-in-chief of the University of Illinois Research and Educational Hospitals. He will continue in both of these capacities, in addition to his duties as acting dean. He has replaced Dr. Stanley W. Olson, who assumed the deanship of the College of Medicine at Baylor University, Houston, Tex., on Jan. 1.

The Board of Trustees has named Dr. Harvey to serve as acting dean until a new dean is appointed, but no later than Sept. 1, 1953. The Board has authorized the appointment of a special committee of five to be chosen by the Executive Committee of the College of Medicine to assist in the selection of a candidate for dean.

The new acting dean has been associated with the University of Illinois since 1946. He has headed the medical Betatron project since its inception in 1948. This has involved the first treatment of human cancer with x-rays up to 25 million volts, as well as the first treatment of human cancer with electrons up to 20 million volts.

During the past two years, he has authored 20 scientific papers, including chapters in three textbooks, on subjects pertaining to radiology.

He is a diplomate of the American Board of Radiology. He currently serves as vice-president of the Chicago Roentgen Society, and holds membership in the Radiological Society of North America, the American Roentgen Ray Society, and the American College of Radiologists.

Prior to joining the University of Illinois, he was associated with the University of Rochester from 1940 to 1946. During the war, he did research work for the Manhattan (atomic bomb) project. He has continued as consultant to the Atomic Energy Commission.

A native of Binghampton, N. Y., Dr. Harvey was graduated from Hamilton College in 1933. He received the master of science degree in radiology

in 1938, and the doctor of medicine degree in 1939, both from the University of Rochester.

Promotions at Illinois.—Promotions have been approved for three members of the Department of Pediatrics at the University of Illinois College of Medicine — Dr. Craig D. Butler, Dr. Benjamin M. Gasul, and Dr. C. J. Harrison.

Dr. Butler has been promoted from clinical associate professor of pediatrics to a full professorship. He has been associated with the University of Illinois since 1941. He previously was associated with Rush Medical College of Chicago, the school from which he received the doctor of medicine degree in 1919.

Dr. Gasul has been promoted from clinical assistant professor of pediatrics to clinical associate professor. He has been a member of the University of Illinois faculty since 1928. He received the doctor of medicine degree from Rush Medical College in 1925, and the master of science degree from the University of Illinois in 1937.

Dr. Gasul has served as director of the Pediatric Cardio-physiology Department at Cook County Children's Hospital since 1946. He is a professor of pediatrics at the Cook County Graduate School of Medicine.

Dr. Harrison has been promoted from clinical assistant professor of pediatrics to clinical associate professor. He has been associated with the University of Illinois since 1941. His affiliation with Rush Medical College dates back to 1930. He received the doctor of medicine degree from Northwestern University in 1927.

DeKALB

Society Chooses Officers.—Dr. H. J. Trapp, Sycamore, was inducted into the presidency of the DeKalb County Medical Society at its next meeting, December 30. Dr. E. F. Glenn, DeKalb, became vice president and president-elect, and Dr. C. E. Clark, Sycamore, was reelected secretary-treasurer. Dr. J. C. Ellis, DeKalb, was named state delegate to the Illinois State Medical Society; Dr. Clark, alternate delegate, and Drs. C. E. Smith, DeKalb, J. F. Eggers, Sycamore, and D. J. Ladd, DeKalb, were named to the board of censors for the respective terms of one, two and three years.

GREENE

Society Election.—Officers of the Greene County Medical Society, elected at its meeting December 10, are N. J. Bucklin, Roodhouse, president; W. T. Stickley, White Hall, vice president; and Paul A. Dailey, Carrollton, reelected secretary-treasurer. Dr. E. G. De Quevado, Greenfield, was elected to the board of censors.

HENRY

Society News.—Dr. F. E. Bollaert, East Moline, addressed the Henry County Medical Society, January 22, on "Recent Suggestions for Elaboration of Medical Ethics."

LAKE

Society News.—John C. Sylvester, Ph. D., chief of the department of bacteriology, Abbott Laboratories, addressed the Lake County Medical Society at the Lake County Tuberculosis Sanatorium, Waukegan, January 13, on "Antibiotics—Past, Present and Future."

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in 1938, and the doctor of medicine degree in 1939, both from the University of Rochester.

Promotions at Illinois.—Promotions have been approved for three members of the Department of Pediatrics at the University of Illinois College of Medicine — Dr. Craig D. Butler, Dr. Benjamin M. Gasul, and Dr. C. J. Harrison.

Dr. Butler has been promoted from clinical associate professor of pediatrics to a full professorship. He has been associated with the University of Illinois since 1941. He previously was associated with Rush Medical College of Chicago, the school from which he received the doctor of medicine degree in 1919.

Dr. Gasul has been promoted from clinical assistant professor of pediatrics to clinical associate professor. He has been a member of the University of Illinois faculty since 1928. He received the doctor of medicine degree from Rush Medical College in 1925, and the master of science degree from the University of Illinois in 1937.

Dr. Gasul has served as director of the Pediatric Cardio-physiology Department at Cook County Children's Hospital since 1946. He is a professor of pediatrics at the Cook County Graduate School of Medicine.

Dr. Harrison has been promoted from clinical assistant professor of pediatrics to clinical associate professor. He has been associated with the University of Illinois since 1941. His affiliation with Rush Medical College dates back to 1930. He received the doctor of medicine degree from Northwestern University in 1927.

DeKALB

Society Chooses Officers.—Dr. H. J. Trapp, Sycamore, was inducted into the presidency of the DeKalb County Medical Society at its next meeting, December 30. Dr. E. F. Glenn, DeKalb, became vice president and president-elect, and Dr. C. E. Clark, Sycamore, was reelected secretary-treasurer. Dr. J. C. Ellis, DeKalb, was named state delegate to the Illinois State Medical Society; Dr. Clark, alternate delegate, and Drs. C. E. Smith, DeKalb, J. F. Eggers, Sycamore, and D. J. Ladd, DeKalb, were named to the board of censors for the respective terms of one, two and three years.

GREENE

Society Election.—Officers of the Greene County Medical Society, elected at its meeting December 10, are N. J. Bucklin, Roodhouse, president; W. T. Stickley, White Hall, vice president; and Paul A. Dailey, Carrollton, reelected secretary-treasurer. Dr. E. G. De Quevado, Greenfield, was elected to the board of censors.

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ALBERT E. DE RIEMER, retired, Chicago, who graduated at Jenner Medical College, Chicago, in 1915, died January 8, aged 78.

JOSEPH EISENSTAEDT, retired, Chicago, who graduated at Northwestern University Medical and Dental School in 1909, died December 18, aged 67.

GEORGE E. GILMAN, Streator, who graduated at the University of Illinois College of Medicine in 1936, died December 16, aged 43.

RALPH T. HINTON, Quincy, who graduated at the College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, in 1904, died December 19, aged 71.

CHARLES E. MAYOS, retired, East Moline, who graduated at the College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, in 1908, died December 19, ager 74. He had served as member of the staff of East Moline State Hospital for 31 years.

LOUIS S. ROBINS, Chicago, who graduated at Northwestern University Medical School in 1926, died January 8, aged 55.

MARY GRITZNER SCHROEDER, Wilmette, who graduated at Rush Medical College in 1921, died November 16, aged 83, of coronary insufficiency and arteriosclerosis. She was a member of the American Psychiatric Association; past president of the Chicago chapter of the Women's Medical National Association; for many years clinical associate in medicine, neurology, and psychiatry at her alma mater.

ROY SEXTON, retired, Streator, who graduated at Northwestern University Medical School in 1894, died recently, on his 84th birthday.

ELZA F. TATE, Plainfield, who graduated at Chicago College of Medicine and Surgery in 1914, died December 12, aged 65.

GEORGE F. TYSON, Evanston, who graduated at National Medical University, Chicago, in 1898, died January 8, aged 80. He had practiced medicine in Evanston for more than 50 years.

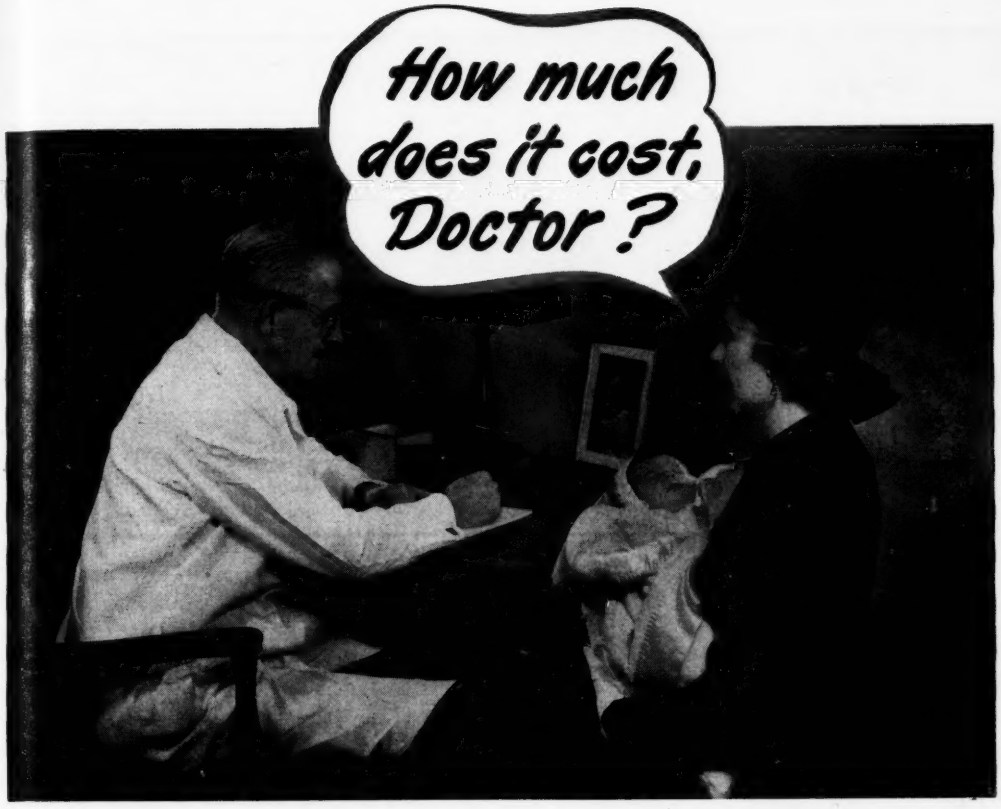
JAMES A. VALENTINE, River Forest, who graduated at the College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, in 1911, died December 30, aged 65. He was senior surgeon at Loretto Hospital.

CHESTER A. WASHBURN, retired, Chicago, who graduated at the Hahnemann Medical College and Hospital in 1908, died December 22, aged 71.

JOSEPH E. WESTERLUND, Cambridge, who graduated at the College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, died in Kewanee Public Hospital, September 6, aged 82, of cerebral hemorrhage.

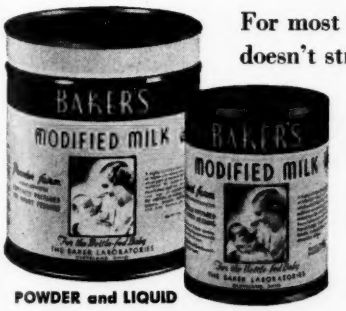
ON PHYSICIANS

One who knows doctors well cannot but like them and have a tender feeling for them. The very nature of their work appeals to one. It has well been said that "physicians have undoubtedly helped to put a kindlier feeling into humanity." That testimony is true and if there were no other reason, that alone should give them a secure place in the hearts of their fellow men. But the doctor is not dependent upon that claim for the affectionate regard of men. Other reasons abound. His service to the race has been and is inestimable. The roster of the world's great men is incomplete without the names of many distinguished doctors. In my judgment doctors have not been given their proper place in history. Long it has been a matter of wonder to me that our schools give such disproportionate attention to the great warriors of the past while those who have served mankind in the quieter, gentler realms of peace are generally neglected. Every school child early is made familiar with the Alexanders, the Caesars, the Napoleons, the Wellingtons, and the Hitlers of history; men whose way to greatness has been hideous with the dead and mangled bodies of the slain over which they have marched. The smoke of destruction has darkened their paths and above the acclaim of their victorious hosts is heard the wail of suffering from multitudes of new-made widows and orphans. *Louis J. Bristow, D.D., Address. New Orleans M. & S.J. Nov. 1952.*



WHEN prescribing an infant feeding formula, you have doubtless often been asked by the mother, "Is it expensive?"

For most families—especially those with children—today's dollar doesn't stretch far. Hence the anxiety of mothers concerning cost.



POWDER and LIQUID

Made from Grade A milk (U. S. Public Health Service Milk Code) which has been modified by replacement of the milk fat with animal and vegetable oils and by the addition of carbohydrates, vitamins and iron.

Sold at an extremely low price, Baker's provides a relatively high protein content (an ample supply of essential amino acids), four sugars, added iron and adequate amounts of vitamins A, D, thiamine, niacin and riboflavin. With Baker's, there's no need to prescribe additional vitamins (except C).

Yet the average cost of feeding most infants on Baker's is only about $1.50 per week. An economical answer to the question, "How much does it cost, doctor?"

BAKER'S MODIFIED MILK

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PHYSICAL MEDICINE ABSTRACTS

EMIL D. W. HAUSER, DEPARTMENT EDITOR

CONSERVATIVE MANAGEMENT OF THE LOW BACK SYNDROME

Robert Brashear, M.D. In THE JOURNAL OF THE TENNESSEE STATE MEDICAL ASSOCIATION, 45:7:267, July 1952.

The various therapeutic measures available for conservative treatment of low back pain should be divided into those employed for the treatment of pain, and those employed in the protection an rehabilitation of the weak back. These measures overlap a great deal and the rehabilitation program may be used for the postoperative weak back as well as the weak back not operated upon.

Manipulation should be considered first, not because its general use is advocated, but because it should be disposed of. We have been scientifically trained not to do things which we do not fully understand, and so far no one has adequately explained exactly what happens when an acute attack of low back pain is suddenly and completely relieved by manipulation.

Back strapping is useful and simple. Bed rest is considered the best treatment for low back pain, and all cases of severe back pain with sciatica should be hospitalized. Traction places a mild but steady pull on spastic muscles thus overcoming and relieving their spasm, and also has the very great advantage of keeping the patient in bed.

Heat and massage once or twice daily add greatly to the patient's comfort and help relieve muscle spasm. An electric pad to the sore area one hour out of every four often is helpful and even the counter-irritant effect of strong liniments is worthwhile.

In the rehabilitation of the weak back, heat and massage may be used. Patients are started on postural exercises as soon as pain permits, A qualified physical therapist is most important, for he will not only teach the patient to do the exercises which have been prescribed but will help to convince the patient that the exercise program is the one thing that will prevent recurrences. The exercises used are very simple and very brief. The development of good body mechanics is most essential, and the patient must be taught to associate good posture with those things he does often and in private.

COMBINATION THERAPEUTIC TANK AND POOL

Samuel Sverdlik, M. D. In ARCHIVES OF PHYSICAL MEDICINE, 33:8:486, August 1952.

A tank incorporating features of many existing therapeutic tanks and pools is described in this article. It was designed for use in acute conditions in a general hospital and requires moderate initial outlay and maintenance.

(*Continued on page* 42)

Greater Relief in

The concept that allergic tissue responses are important contributory factors in upper respiratory infections, particularly the common cold, has been widely accepted. To combat these allergic manifestations more successfully, Thenfadil — one of the most effective and best tolerated antihistaminics — has been combined with the time-tested A.P.C. formula commonly used for the symptomatic treatment of the common cold.

Thenfadil A.P.C. appears to be more effective in shortening the disease the earlier it is used at the onset of a cold. In established cases Thenfadil A.P.C. alleviates headache, fever, malaise as well as generalized aches and pains.

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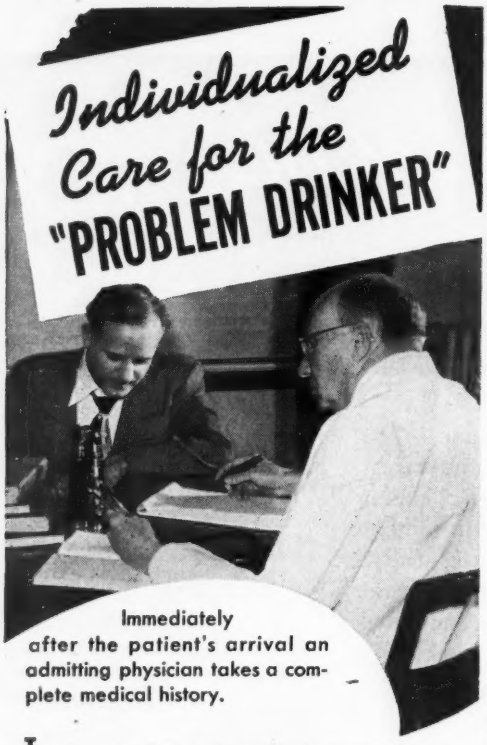

Immediately after the patient's arrival an admitting physician takes a complete medical history.

Treatment of the alcoholic is more than a sobering-up process; it is a rehabilitative procedure tailored to the needs of the individual.

The physicians at The Keeley Institute have had many years' experience in treating this class of patient and are specialists in their chosen field.

On arrival the patient is taken in hand by an admitting physician who obtains a complete medical history. This constitutes the first step toward instituting individualized care and treatment.

Subsequently, following a thorough physical examination and indicated laboratory studies, a detailed course of management can be outlined. It should be emphasized that no patient is continued under treatment unless he recognizes his problem and cooperates with the staff physicians.

Member, American Hospital Association
Member, Illinois Hospital Association
The Keeley Institute is accredited by the Council on Medical Education and Hospitals of the A.M.A.

Complete information, including rates, will be furnished to physicians on request.

THE KEELEY INSTITUTE
DWIGHT, ILLINOIS

Physical Medicine (Continued)

A perforated steel platform occupies the entire inner surface of the tank and can be placed at any desired height or inclination. By inclining the platform, the degree of buoyancy is modified in the shallow portion and exercise value is derived from the added resistance of the body. Likewise, by raising the platform, children can be treated for gait training at a uniform working height. With the platform at its uppermost resting level, the water depth allows for underwater exercises.

This tank has been found useful for a variety of conditions, such as arthritis, poliomyelitis, back pain, chronic phlebothrombosis of the lower extremity, decubiti, lower extremity and pelvic fractures, as well as upper extremity fractures.

THE ROLE OF PHYSICAL MEDICINE IN THE MANAGEMENT OF THE UPPER EXTREMITY AMPUTEE

Raoul C. Psaki, Lt. Col., M.C., U.S.A., and Anielio F. Mastellone, Lt. Col., M.C., U.S.A. In UNITED STATES ARMED FORCES MEDICAL JOURNAL, 3:4:627, April 1952.

The rehabilitation of the upper extremity amputee is a five-point program, and each phase in the process is equally important to its ultimate success. The psychologic preparation of the patient is vital to the success of the program and should be the responsibility of all concerned with the management of the patient. The orthopedist evaluates the patient's surgical needs and provides an adequate stump. The physiatrist is concerned primarily with the pre- and postprosthetic training of the amputee. This phase of the program is extremely important because the amputee must be encouraged to use the prosthesis and obtain the maximal functional benefit from it, particularly in bimanual activities.

The loss of an upper extremity produces a change in the patient's center of gravity and may produce defects of postural alinement, contractures, and muscular imbalance which will compromise the optimal functional result. Physical measures designed to prevent and correct these deformities should be instituted as early as possible. When physical therapy is started the patient should be indoctrinated in the importance

(*Continued on page* 44)

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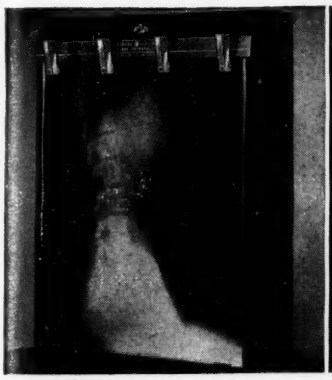

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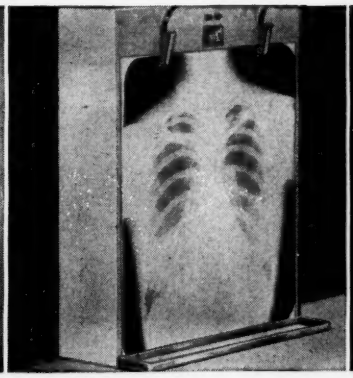
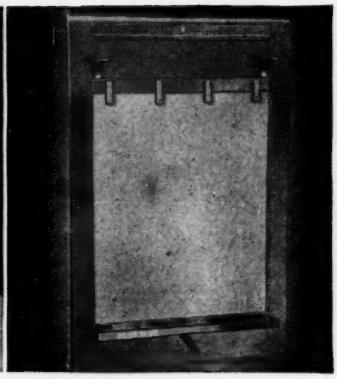
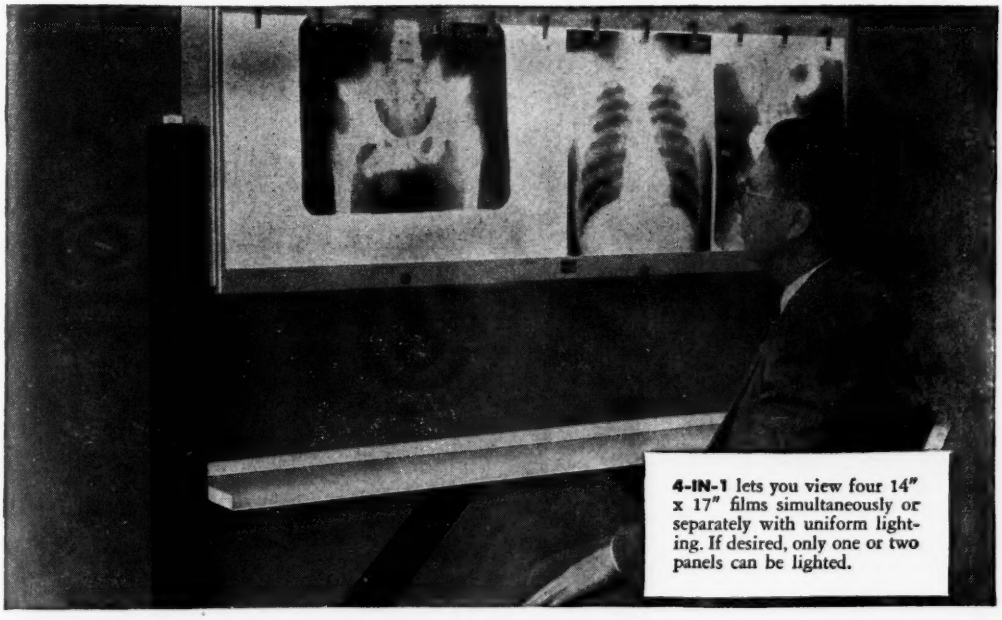


DUOLINE — a lighter, less expensive unit, yet with excellent illumination from two straight General Electric fluorescent lamps.



EXPLOSION-PROOF for operating rooms. Stainless steel throughout and, like the other GE illuminators shown, U/L approved.



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Physical Medicine (Continued)

of postural exercises. The definitive preprosthetic measures are determined by an evaluation of the patient with respect to: (1) postural alinement, (2) joint mobility, (3) muscular strength, (4) the presence of pain, and (5) the condition of the stump.

The treatment program consists of general measures such as mat exercises designed to overcome deconditioning, postural defects, and muscular atrophy and weakness; and specific measures such as the judicious use of heat, massage, proper bandaging of the stump, and therapeutic exercise to the involved extremity. Adequate mobility of the proximal segments of the extremity must be assured in order that the greatest functional use of the prosthesis may be obtained. Thus the mobility of the scapulas is of prime importance, particularly in patients who will be fitted with the shoulder-harness type of appliance. The degree of ultimate usefulness of the prosthesis depends on the active mobility of the shoulder girdle.

MANAGEMENT OF MULTIPLE SCLEROSIS

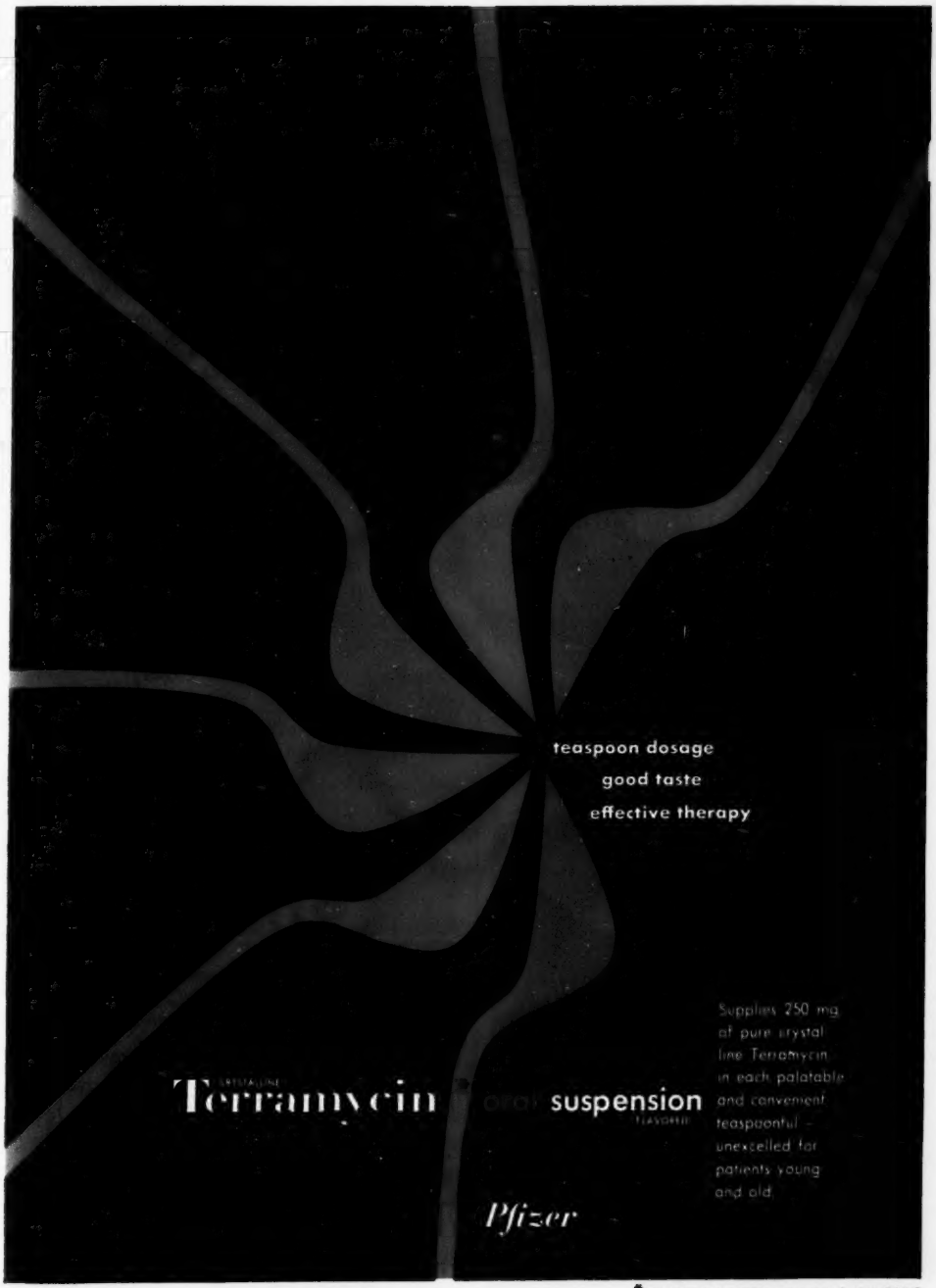
Hinton D. Jonez, M.D. In POSTGRADUATE MEDICINE, 11:5:419, May 1952.

Physical therapy is of great value in the chronic cases of multiple sclerosis. Nonparalyzed, atrophic and weak muscles become functional again as a result of such therapy. Coordination exercises and muscle reeducation are part of this program. Badly contracted limbs are straightened with hot packs, simple orthopedic procedures and braces. Various types of canes and crutches are useful in getting patients out of wheel chairs and walking again. However, short rest periods taken periodically during the day are beneficial and usually are necessary.

As an adjunct to physical therapy, voluntary muscle relaxation is very important. The principal drugs used for this effect are prostigmin, myanesin and curare. The latter has proved to be most valuable in the opinion of Jonez.

Treatment as outlined by Jonez does not cure, but it does arrest symptoms a great many times. Above all, it holds out hope to these patients with reference to their future. Bedfast cases have been made ambulatory or wheel chair cases, and wheel chair patients have been made ambu-

(*Continued on page* 46)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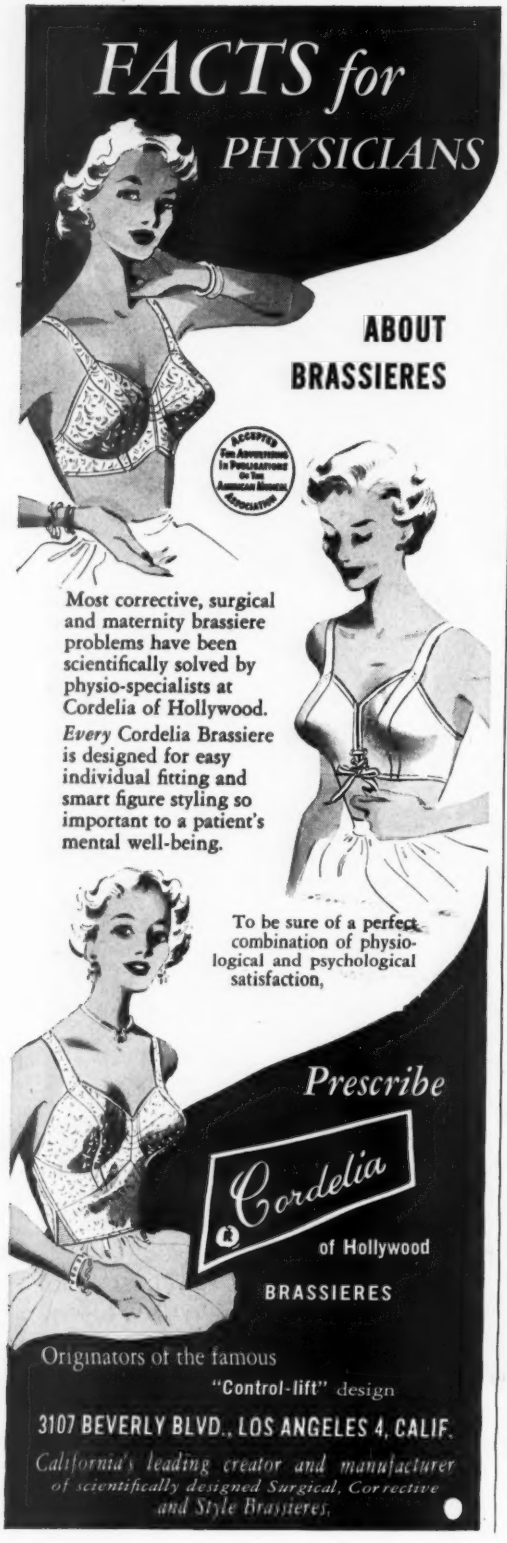
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Physical Medicine (Continued)

latory. Still others have become symptom-free and remained so without an exacerbation up to periods of over five years. This is more than can be done for many other chronic diseases.

THE REHABILITATION OF THE HEMIPLEGIC

Herman J. Bearzy, M.D. In THE OHIO STATE MEDICAL JOURNAL, 48:5:409, May 1952.

Since not all hemiplegics can be aided by rehabilitation, it is necessary first of all to exclude those cases in which the pathological processes will prohibit many of the physical activities that are required in a rehabilitation program. Careful evaluation must be made of the physical and mental status of the patient with hemiplegia. The physiatrist is consulted to determine the strength of both the affected and normal muscles; to check the range of motion of the involved joints, and to institute early procedures for the prevention or correction of contractures or deformities. The physiatrist also should perform the activities of daily living test to determine the amount of functional disability present.

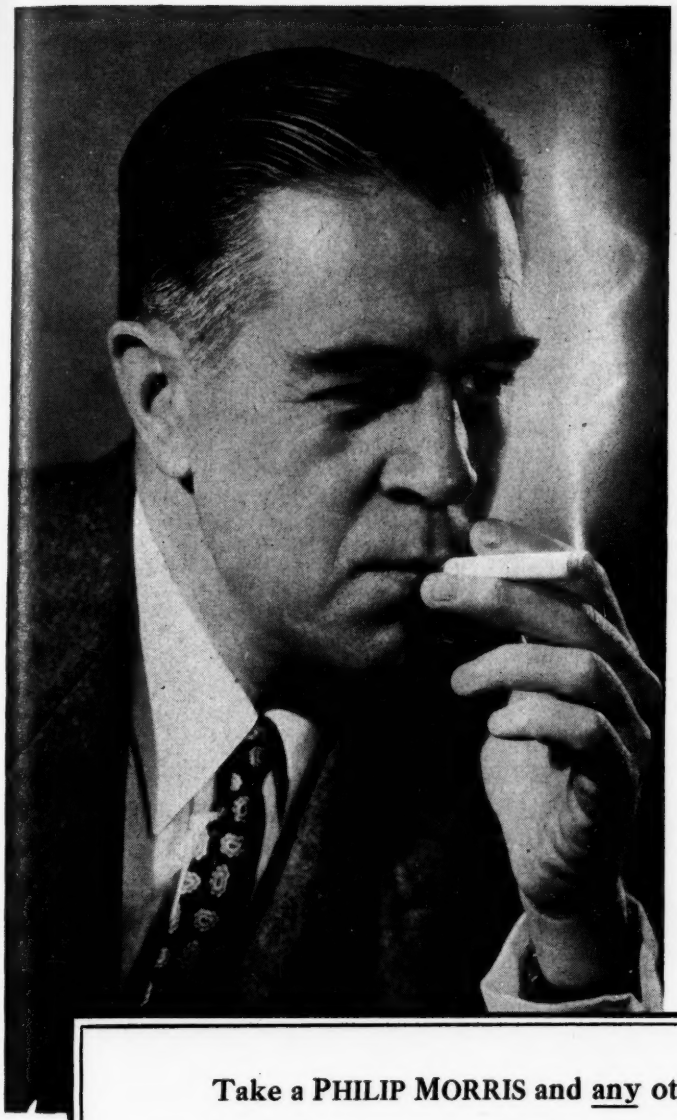
After careful evaluation of the patient has been accomplished, the internist, neurosurgeon and physiatrist work as a team to plan for the immediate and long term care of the patient. Treatment may be considered in three phases: (1) medical care of the apopletic stroke during the immediate onset; (2) medical management of the resultant hemiplegia, and (3) those physical activities that aim to rehabilitate the individual to a life of usefulness and self independence.

Physical therapy in the first stage consists of heat and massage to alleviate pain and spasticity, and to prepare the extremities for passive stretching motions. Electrotherapy also has been of some value as an aid in muscle reeducation and in helping to overcome certain fixed deformities which most hemiplegics tend to develop.

The second phase of the treatment of the apoplectic stroke consists of those activities directed towards the residual hemiplegia to improve neuromuscular coordination, muscle function and muscle strength.

Bedside rehabilitation activities, after the

(*Continued on page 48*)



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Physical Medicine (Continued)

acute phase of the illness is over, should consist of a continuation of passive exercise and pulley therapy.

The third and final stage of the rehabilitation program attempts to improve functional performance by retraining the patient in ambulation, reestablishing function and coordination in the affected upper extremity, improving speech performance, and establishing a good home program for the patient when he is finally discharged from the hospital or clinic.

Advanced ambulation training may be carried on in the rehabilitation department or in the patient's home. Active resistive or progressive resistive exercises are given to strengthen all affected muscle groups preparatory to full ambulation. Posture exercises are given to correct any postural defects that may be present. The patient then progresses to walking between parallel bars, and finally with crutches or canes.

The affected fingers and hand of the hemiplegic are the last to recover any useful function. Since most cases fail to recover full functional use of the involved hand, it is important that one-handed skills with the unaffected hand be started early and continued until the patient has regained adequate function in the affected hand to perform the activities essential to daily living. The rehabilitation of the spastic arm should begin with a series of exercises directed towards increasing and improving motion first in the shoulder, then in the upper arm, forearm, and hand. Re-education exercises, similar to those used in poliomyelitis, are required to retain these muscles for normal functional movements. Once the normal pattern of motion has been reestablished, muscle strengthening and coordination exercises can be prescribed.

COMPLETED MEDICINE—REHABILITATION

Nila Kirkpatrick Covalt, M.D. In JOURNAL OF THE AMERICAN MEDICAL WOMEN'S ASSOCIATION, 7:1:9, January 1952.

The dynamic therapy in the treatment of any acute or chronic disease should be treatment of the whole man. It is not enough to make a brilliant diagnosis, or save a life, then send the

(*Continued on page* 52)

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Physical Medicine (Continued)

patient home to vegetate. A patient with a physical disability should be taught to be physically self sufficient. Assistance should be given to help an individual readjust to any mental trauma which may have occurred as a result of the illness. Many patients need assistance and advice in regard to returning to their previous occupations, or may need to be re-trained for new jobs suited to their remaining capabilities.

Any patient who has had a cerebral vascular accident can be taught to walk again, if he has the desire to do so. Medical complications which need confine such individuals to bed for the remainder of their lives are rare. A similar situation is too prevalent with civilians who have had amputations.

It is unfortunate when civilian individuals with static physical disabilities, such as the hemiplegics, the amputees, the paraplegics, and the victims of poliomyelitis are not physically rehabilitated. All of these patients should be taught self care to the maximum of their remaining capabilities. There are no specific rules or technique, except that from the standpoint of body mechanics certain methods should work best with each disability.

The achievement of physical independence is of the utmost importance in restoring an individual's self respect. If the individual can be made economically self sufficient again, the financial gains to himself and his community are tangible gains. Every individual who is physically self sufficient saves money for himself or for others. Financial gains alone are measurable, but the restoration of self respect and happiness to an individual is of far more importance.

In general, patients with minimal pulmonary tuberculosis should not undergo chemotherapy, because most of them derive as much benefit from ordinary methods of treatment. In any event, the importance of correlating chemotherapy with other methods of treatment cannot be stressed too greatly. Chemotherapy is not a substitute for prolonged bed rest, and the proper timing of the addition of collapse therapy, when appropriate, should be planned in each case on an individual basis, at the outset. William S. Schwartz, M.D., the J. A. M. A., February 23, 1952.

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BOOK REVIEWS

A COURSE IN PRACTICAL THERAPEUTICS by Martin Emil Rehfuss, M.D., F.A.C.P., Professor of Clinical Medicine and Sutherland M. Prevost, Lecturer in Therapeutics, The Jefferson Medical College, Philadelphia; Attending Physician, The Jefferson Medical College Hospital, Philadelphia. Alison Howe Price, A.B., M.D., Associate Professor of Medicine, The Jefferson Medical College, Philadelphia; Asst. Physician to the Jefferson Medical College Hospital, Philadelphia; Chief of Diabetic Clinic, Curtis Clinic, Philadelphia. Second Edition. Baltimore, The Williams & Wilkins Company, 1951.

This is a large volume primarily designed for the student of medicine or the young man just starting in private practice. However, because of its logical development of subject matter, excellent index and fine drawings, illustrations and detailed charts, it makes for a handy reference book for the busy practitioner.

It is divided into four main sections. The first section deals with the general principles of therapeutics. Here the authors have stressed the value of a well-planned program of investigation into the cause of disease followed by logical sequence of treatment. It deals with prescription writing, basic drugs, diets, nursing problems and even enumerates the contents of a physicians bag.

The second section is devoted to symptomatic therapy. Most of the common symptoms of disease are considered and a differential diagnosis is listed. At the conclusion of the discussion of each symptom, a routine program of treatment with the use of the representative drugs is offered.

The third section covers specific disorders found in internal medicine with the exception of the nervous system. The authors feel that neurology and psychiatry may best be covered in a separate volume.

The concluding section attempts to cover some of the specialties in medicine and therapeutics such as atomic warfare, radioactive isotopes, pediatrics and oxygen therapy to mention but a few of the twenty-one subjects under consideration.

J.W.P.

OPHTHALMIC PATHOLOGY. An Atlas and Textbook. By Jonas S. Friedenwald, Helenor Campbell Wilder, A. Edward Maumenee, T. E. Sanders, John E. L. Keyes, Michael J. Hogan, W. C. and Ella U. Owens, with the editorial assistance of Helen Knight Steward. Published under the Joint Sponsorship of the American Academy of Ophthalmology and Otolaryngology and the Armed Forces Institute of Pathology. 489 pages with CCLX Plates. Philadelphia and London: W. B. Saunders Company, 1952. Price $18.00.

The publication of this book has been an event long anticipated by all students of ocular pathology. An outgrowth of the Atlas of Ophthalmic Pathology previously prepared by DeCoursey and Ash on the basis of the enormous collection of pathological material in the Army Medical Museum it has been developed with painstaking care into as complete an exposition of the subject as is to be found in the opthalmic literature. Using Friedenwald's "Pathology of the Eye" as a basis for the text the distinguished committee of ophthalmic pathologists has labored arduously and with complete success to produce an authoritative, modern, and comprehensive treatise on ophthalmic pathology.

The descriptive material is arranged logically into various chapters, each of which is followed by numer-

(Continued on page 56)

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BOOK REVIEWS (Continued)

ous illustrations, mostly from the voluminous files of the Armed Forces Institute. It is unfortunate that the cost of reproducing these plates in color would have been prohibitive since their value to the casual reader would have thus been enhanced. To the earnest student this will not be a serious deficiency since the black and white photomicrographs are well chosen and satisfactorily reproduced. The text is clear, concise and yet complete, written with a facile literary style which makes it understandable to the novice as well as to the more experienced pathologist. For that reason the book will prove invaluable to the neophyte in ophthalmology, whose training is frequently deficient in pathology but who must master the rudiments for his American Board examination. Later he will have occasion to refer to it for a better pathological understanding of some of his more perplexing clinical cases.

The American Academy of Ophthalmology and Octolaryngology, the Armed Forces Institute of Pathology, and particularly the authors directly responsible are to be congratulated on producing this outstanding atlas and textbook and thereby making one of the most significant contributions of our time to the understanding of ophthalmic pathology.

W.A.M.

THE CLINICAL USE OF FLUID AND ELECTROLYTE: By John H. Bland, M.D., Assistant Professor of Medicine, University of Vermont College of Medicine. 259 pages with 75 figures. Philadelphia and London: W. B. Saunders Company, 1952. Price $6.50.

This monograph is one of a series stated by the publisher to have been produced inexpensively in order to be available to a wider audience. It is paper bound but printed attractively on good quality paper. Although the type is somewhat smaller than in most medical books, it is perfectly legible. One might wish that the pages had been divided into two columns for easier reading, but this is a small disadvantage.

It will be interesting to note the response of the medical public to these monographs. Surely decrease in cost of medical publications is for the best interests of the publisher as well as the reader.

The monograph succeeds well in its stated aim—that of providing a practical guide to the recognition and treatment of fluid and electrolyte abnormalities that may arise in disease.

The introductory chapters include basic physiological concepts of body fluid and electrolyte balance, based largely on Gamble's work. Other chapters discuss changes in heart failure, pediatric and geriatric patients, surgical patients, kidney disease, diabetes and adrenal cortical disease. The book concludes with a chapter on the changes in body water and electrolyte in shock, burns, crush and blast injuries, X-irradiation, cold and other stresses. Abnormal potassium metabolism and lower nephron nephrosis are fully discussed.

This monograph is well written and up to date. It

(*Continued on page* 58)

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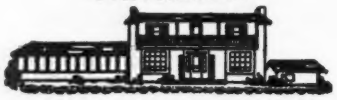

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H. J. Carr, M.D., Staff Physician.

BOOK REVIEWS (Continued)

should be useful if not essential to clinicians as well as laboratory workers.

J. C. S.

BIOCHEMISTRY FOR MEDICAL STUDENTS: By William Veale Thorpe, M.A. (cantab.), Ph.D. (Lond.), University of Birmingham. 5th ed., 528 pages, 41 illustrations. Lippincott, Philadelphia, 1952. Price $6.00.

This is the fifth edition of this popular textbook of biochemistry since 1938. It makes an attempt to cover the many advances that biochemistry has made since the last edition in 1947. Progress in biochemistry has been so rapid in recent years that any text is somewhat outdated before it comes to print; however, this book does include enough material to provide an adequate background for the student.

The most significant recent advance covered is the establishment of the tricarboxylic acid cycle of Krebs, and the chapters on metabolism have largely been recast and rewritten in proper perspective to this.

A chapter on food costs is included in the section on nutrition; its value is slight because of the change in food prices since it was compiled.

On the whole, the book provides a satisfactory reference for the student of biochemistry.

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BOOKS RECEIVED

The following books have been received for reviewing, and are herewith acknowledged. This listing should be considered as a sufficient return for the courtesy of the sender. Books that appear to be of unusual interest will be reviewed as space permits each month. Readers desiring additional information relative to books listed, may write the Editor who will gladly furnish same promptly.

THE LITERATURE ON STREPTOMYCIN, 1944-1952. By Selman A. Waksman. Rutgers University Press. New Brunswick, New Jersey, 1952. 553 pages. $5.00.

HOW TO HAVE A HAPPY CHILD. By Beulah France, R.N. Introduction by Milton Levine, M.D. Sterling Publishing Company Inc., New York. 130 pages. $2.50.

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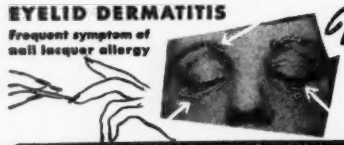

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